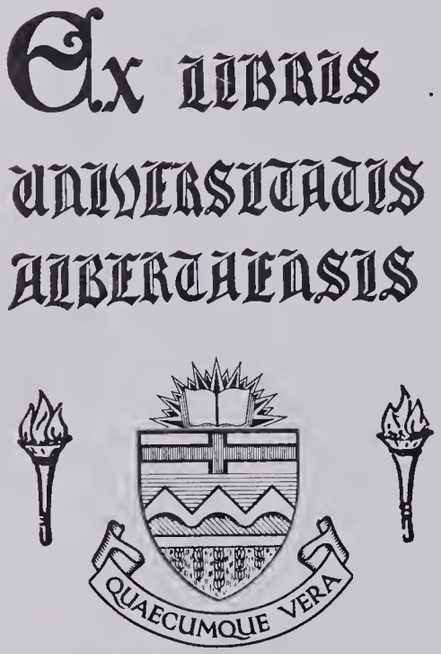
For Reference

NOT TO BE TAKEN FROM THIS ROOM

For Reference

NOT TO BE TAKEN FROM THIS ROOM



The University of Alberta
Printing Department
Edmonton, Alberta

UNIVERSITY OF ALBERTA
LIBRARY

Regulations Regarding Theses and Dissertations

Typescript copies of theses and dissertations for Master's and Doctor's degrees deposited in the University of Alberta Library, as the official Copy of the Faculty of Graduate Studies, may be consulted in the Reference Reading Room only.

A second copy is on deposit in the Department under whose supervision the work was done. Some Departments are willing to loan their copy to libraries, through the inter-library loan service of the University of Alberta Library.

These theses and dissertations are to be used only with due regard to the rights of the author. Written permission of the author and of the Department must be obtained through the University of Alberta Library when extended passages are copied. When permission has been granted, acknowledgement must appear in the published work.

This thesis or dissertation has been used in accordance with the above regulations by the persons listed below. The borrowing library is obligated to secure the signature of each user.

Please sign below:

Date	Signature	Institution

THE UNIVERSITY OF ALBERTA

A SURVEY OF EDUCATIONAL DATA PRACTICES OF A MEDIUM-SIZED URBAN SCHOOL DISTRICT

by

© DONALD NISSEN

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE

OF MASTER OF EDUCATION

DEPARTMENT OF EDUCATIONAL ADMINISTRATION

EDMONTON, ALBERTA

SPRING, 1969

Thesis
1969
98

UNIVERSITY OF ALBERTA

FACULTY OF GRADUATE STUDIES

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies for acceptance, a thesis entitled A SURVEY OF EDUCATIONAL DATA PRACTICES OF A MEDIUM-SIZED URBAN SCHOOL DISTRICT, submitted by Donald Nissen in partial fulfilment of the requirements for the degree of Master of Education.

Digitized by the Internet Archive
in 2019 with funding from
University of Alberta Libraries

https://archive.org/details/Nisser1969

ABSTRACT

The purposes of this study were (1) to determine the uses of information generated from data gathered in particular formalized information flows as perceived by users of the information, (2) to determine what formalized information flows the district had and what the mechanics of these flows were, (3) to determine whether such flows could be analyzed in terms of three processing functions viz. decision-making points, communication links and storage file mode, (4) to obtain an evaluation of present procedures by district personnel, and (5) to present some guidelines regarding the implementation of a machine-oriented system applicable to the district studied.

The subject of the study was the Saskatoon Public School District, Saskatoon, Saskatchewan.

The approach used in carrying out the study consisted of such activities as acquisition of forms used in the system; classification of these forms into five areas viz. fiscal, property, staff, student and curriculum; and personal interviews with district personnel.

Extensive formalized information flows were found in the Business Division, Pupil Personnel and Staff Areas. Flowcharts and narrative description of procedures of sub-systems in each of these areas were developed. Statements on the uses of the information and procedures employed in their collection, processing and use are reported on. Analyses of exemplar flows in each of the three areas were accomplished. Evaluation of present procedures by district personnel was obtained and presented. A discussion related to the implementation of a machine-oriented system applicable to the district was given.

ACKNOWLEDGEMENTS

The writer wishes to acknowledge the assistance of a number of individuals during the course of this research project.

The writer wishes to express his deep gratitude for the counsel of Dr. W. D. Neal. Throughout the course of the study his advice and constructive criticism was instrumental in the development and completion of the project. In addition, Drs. C. S. Bumbarger and J. E. Bicknell contributed many beneficial suggestions.

Grateful thanks is extended to Dr. F. J. Gathercole, Director of Education, Saskatoon Public Schools and Collegiates, who gave permission and encouragement to carry out this study; and to the numerous Personnel of the Saskatoon Public School District - Department Heads, Supervisors, Principals, Clerical Staff and others who gave generously of their time and assistance.

The writer also wishes to express deep gratitude to his wife, Mary Anne, for her encouragement and the generous giving of the time and patience required to type the study.

TABLE OF CONTENTS

CHAPTER		PAGE
I.	INTRODUCTION	1
	The Problem	1
	General statement of the problem	1
	Specific research questions	1
	Answering and expanding the survey questions	2
	The Importance of the Study	3
	Definition of Terms and Explanation of Symbols Used	5
	Definition of terms	5
	Flowcharting symbols and their description	6
	Delimitations and Limitations of the Study	6
	General characteristics of the district	8
	Administrative organization of the district	10
	Delimitations of the study	13
	Limitations of the study	13
	Succeeding Chapters	14
	Answers to the specific research questions	14
	Succeeding chapters	14
II.	COLLECTION AND TREATMENT OF DATA	15
	The Approach Used and the Data Required	15
	Bases of the approach	15
	The approach	16
	Sources of Data	17
	Treatment of Data	17

CHAPTER PAGE

III. PERSONNEL DEPARTMENT DATA PRACTICES 19

Introduction 19

Uses of Information 19

Certificated Personnel Flows 20

Recruitment procedures 20

Certificated employee file 26

Classified Personnel Flows 29

Recruitment procedures 29

Classified employee record file 33

Analysis of Data Processing Flow 33

Decision-making 33

Communication links 36

Storage 38

IV. PUPIL ACCOUNTING DATA PRACTICES 39

Introduction 39

Uses of Information 39

Information about individual students 40

Summary information about groups of pupils 40

Enrollment Flow 41

Registration Flow 44

Attendance Flow 45

Student Health Records Flow 48

Health record card 50

Accomplishment of health record card 50

Health services procedures 51

CHAPTER PAGE

Grade Processing and Reporting Flow 52
Analysis of Data Processing Flow 55
Decision-making 55
Communication links 57
Storage 58
V. BUSINESS DIVISION DATA PRACTICES 59
Introduction 59
Uses of Information 59
Requisitioning procedures 60
Purchasing procedures 61
Accounts payable procedures 61
Payroll procedures 61
General Ledger procedures 62
Requisition Procedures 62
Requisition types 62
Information required on requisitions 67
Changes in requisitions 67
Disposal of requisitions 67
Delivery schedule 69
Incorrect delivery 69
Purchase Order Procedures 69
Accounts Payable Procedures 72
Payroll Accounting Procedures 75
General Ledger Procedures 77
Voucher Journal 79

CHAPTER PAGE

General Journal 79

Cash Book 80

Posting to General Ledger 80

Analysis of Data Processing Flow 80

Decision-making 80

Communication links 81

Storage 81

VI. EVALUATION OF PRESENT PROCEDURES AND IMPLEMENTATION OF A MACHINE-ORIENTED SYSTEM 83

Introduction 83

Evaluation of Procedures by District Personnel 83

A Machine-Oriented System and Some Techniques for Implementation 86

The approach to the system 87

Flowcharts 87

Data storage 89

Usage of the information system 91

Implementing the data bank and information system . . 92

Conclusion 93

VII. SUMMARY AND SUGGESTIONS FOR FURTHER RESEARCH 95

Summary 95

Summary of Findings 96

Suggestions for Further Research 97

Implications 99

BIBLIOGRAPHY 101

LIST OF FIGURES

FIGURE		PAGE
1.	Flowchart Symbols and What They Represent	7
2.	Administrative Organizational Chart: Saskatoon Public Schools	11
3.	Recruitment Procedures for Certificated Personnel	21
4.	Certificated Employee Record File	27
5.	Recruitment Procedures for Classified Personnel	31
6.	Classified Employee Record File	34
7.	Enrollment Flow	42
8.	Attendance Flow	46
9.	Student Health Records Flow	49
10.	Grade Processing and Reporting Procedures	56
11.	Classroom Supply Requisition Procedures	63
12.	Caretaker Supply Requisition Procedures	65
13.	General Supply Requisition Procedures	66
14.	Maintenance Supply Requisition Procedures	68
15.	Purchasing Procedures	70
16.	Accounts Payable Procedures	73
17.	Payroll Accounting Procedures	76
18.	General Ledger Procedures	78
19.	Proposed Organization of a Filing System	90

CHAPTER I

INTRODUCTION

I. THE PROBLEM

The purpose of this study was to investigate and report on the current educational data procedures and practices of the Saskatoon Public School District No. 13.

General Statement of the Problem

The problem was stated in the following general way: what are the current formalized educational data practices of the Saskatoon Public School District No. 13; what are the purposes of these practices as seen by district personnel; and what, in general, are the evaluations of district personnel regarding the procedures employed?

Specific Research Questions

Because the study was both exploratory and descriptive, no hypotheses were tested. Rather, it was the intent to obtain answers relevant to the following specific questions.

1. What are the uses of the information generated from the data gathered in particular formalized information flows as perceived by the users of the information?

2. What formalized information flows does the district have and what are the mechanics of these flows?

3. Do some of the information flows lend themselves to analyses in terms of three processing functions *viz.* decision-making points, communication links, and storage file mode?

4. What, in general, is the evaluation by district personnel of the present procedures used?

5. What are some guidelines to consider in the implementation of a machine-oriented system?

Answering and Expanding the Survey Questions

1. In order to identify the uses of information and information flows as perceived by users in a systematic way the formal organization and characteristics of the district were ascertained.

2. In order to identify the existence of formalized information flows in the district it was necessary to gather information regarding forms, reports, procedures, policies, characteristics and so on of the school system as they related to the following five broad categories of information: fiscal, property, staff, student, and curriculum. On the basis of the above, and in order to map out the mechanics of the various flows it was necessary to determine which departments contained formalized information processes and then to gather data on these component parts of the system in order to present a detailed analysis and mapping out of their information operations.

3. An exemplar analysis of one flow from each of the areas selected for intensive study was done in order to answer the third question and to provide an illustration of such an analysis. In this regard, flows which contained decision points were selected.

4. Obtaining an evaluation of present procedures from district personnel was undertaken in order to determine in a general way some of the inadequacies of the information systems as perceived by district personnel and to determine the directions in which the district appeared to be heading regarding implementation of new techniques and procedures.

5. On the basis of the answer to question four i.e. the district seemed to be heading towards implementing a machine-oriented system,

it was decided to present some guidelines and proposals based on the literature regarding the implementation of such a system applicable to the district.

II. THE IMPORTANCE OF THE STUDY

Administrative decisions should be based on accurate, accessible and timely information. The complexity and size of school systems caused by increased enrollment, expansion of services and introduction of new services, the expanded participation by provincial and federal governments in education, and the greater involvement of other agencies in the field of education have placed stress on the need for more efficient and effective educational information systems.

> Every school administrator today is conscious of the great increase in volume and cost of paper work. With millions of new students entering the public schools, we are becoming glutted with literally hundreds of pieces of essential data that are generated, processed, recorded, copied, reprocessed, filed, evaluated, collated and indexed for each student.[1]

Many administrators look at data processing hardware as the panacea for handling this avalanche of paper.[2] The Federal Govenment in the United States has supplied large amounts of money to set up regional computerized information-processing organizations.

Before the computer panacea is considered, a knowledge of present practices seems required.

---

[1]Alvin Grossman, "The School Information System," The Automation of School Information Systems, Don. D. Bushnell, editor (Washington, D. C.: National Education Association, 1964), p. 27.

[2]Ibid.

> Management's preoccupation with using computerization as a means of cost reduction through replacement of clerical personnel prevented a thorough restudy of the existing information system that could have shown the way to much larger gains than were realized.[3]

This study was undertaken in order to meet the above requirement regarding the need for knowledge of the current data practices of a school district not yet employing a machine-oriented information system.

In large city systems the introduction of electronic data processing could perhaps be justified in terms of cost and efficiency in replacing older, more costly and less efficient data-processing practices. Further, these larger systems would have the resources to fully capitalize on such hardware by expanding their functions to encompass instructional uses and other areas.

This may not be applicable so readily to medium-sized districts whose student populations range from ten thousand to thirty thousand.[4] They may lack the resources to extensively automate their data systems and are perhaps not in a position to capitalize on such hardware to the extent that larger systems would. The district selected for study therefore was one that was urban and of medium size.

Finally, this study could have significance to the officers of the Saskatoon Public School District since it reveals information about their system which may prove useful in the adoption of new data-processing procedures.

---

[3]C. J. Haberstroh, "Organization Design and Systems Analysis," Handbook of Organizations, James G. March, editor (Chicago: Rand McNally and Company, 1965), p. 1194.

[4]E. Haga, Automated Educational Systems, (Elmhurst, Illinois: OA Business Publications, Inc., 1968), p. 87.

III. DEFINITION OF TERMS AND EXPLANATION OF SYMBOLS USED

Definition of Terms

Information Flow. The data and the sequence of operations to be performed upon it together constitute the information flow.

Flowchart. Flowcharts are a means of presenting information and operations so that they are easy to visualize and follow. They show the flow of data through an information processing system, the operations performed in the system, and the sequence in which they are performed.

Certificated Personnel. This term refers to personnel who possess teaching certificates, who occupy positions requiring such certification and who are for Provincial Grant purposes classified as teachers.

Classified Personnel. Classified Personnel include clerical, maintenance, and operational personnel but not certificated personnel.

The District. As used in this study the term refers to the Saskatoon Public School District No. 13, Saskatoon, Saskatchewan.

Coding. Coding is a system of numbering, or otherwise designating, accounts, entries, invoices, vouchers and so on in such a manner that the symbol used reveals quickly certain required information.

Posting. Posting is the act of transferring to an account in a ledger the detailed or summarized data contained in the cash receipts book, check register, journal voucher, or similar books or documents of original entry.

General Ledger. A General Ledger is a book, file, or other device in which accounts are kept to the degree of detail necessary. It summarizes the financial transactions of the school district.

Flowcharting Symbols and Their Description

An IBM flowcharting template, which contains cutouts for flowchart symbols, was used for drawing flowcharts.[5] An IBM manual on flowcharting techniques was used as a guide for preparing the flowcharts and using the template.[6] Figure 1 portrays the flowchart symbols used in this study and describes what they represent.

Generally, solid lines are used for the symbols and the line connections that indicate flows between them. Occasionally, broken lines are used for the document symbol when it refers to forms that are not standardized or to situations in which no set form is used. Broken connector lines are used to indicate that the connection is not immediate but made following the completion of a flow indicated by solid lines.

IV. DELIMITATIONS AND LIMITATIONS OF THE STUDY

This section presents selected general characteristics of the district studied and a description of its administrative organization. Following these the delimitations of the survey are listed and the limitations of the study stated.

It was necessary to obtain information on the characteristics of the district so that the researcher would know where to go in the system to acquire the data needed for the study. Such a description

---

[5]IBM, Technical Publications Department, Flowcharting Template Form X20-8020 (White Plains, New York: International Business Machines Corporation).

[6]IBM, Technical Publications Department, Flowcharting Techniques Document C20-8152 (White Plains, New York: International Business Machines Corporation).

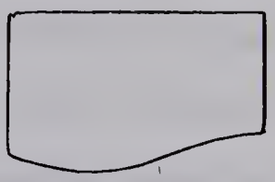
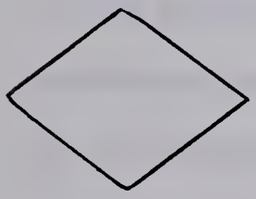
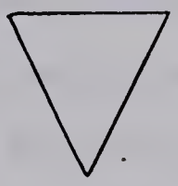
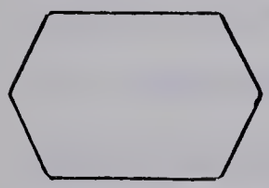
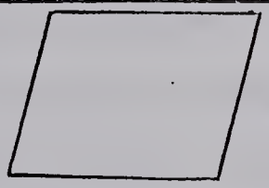
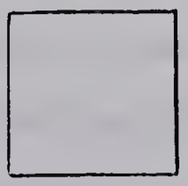
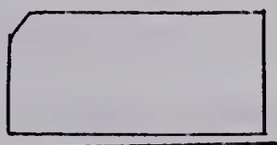
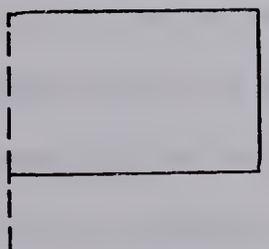
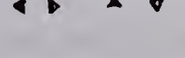
SYMBOL	REPRESENTS:	SYMBOL	REPRESENTS:
	PROCESSING - A MAJOR PROCESSING FUNCTION.		DOCUMENT - PAPER DOCUMENTS AND REPORTS OF ALL KINDS.
	DECISION - THE DECISION FUNCTION USED TO DOCUMENT POINTS WHERE ALTERNATIVE CHOICES BASED UPON VARIABLE CONDITIONS ARE POSSIBLE.		FILE - OFFLINE STORAGE OR FILE OF FORMS, DOCUMENTS AND INFORMATION.
	PREDEFINED PROCESS - A GROUP OF OPERATIONS NOT DETAILED IN A FLOWCHART.		CLERICAL OPERATION - A MANUAL OPERATION NOT REQUIRING MECHANICAL AID.
	OFFPAGE CONNECTOR - A CONNECTOR USED TO DESIGNATE ENTRY OR EXIT FROM A PAGE.		AUXILIARY OPERATION - AN OPERATION SUPPLEMENTING THE MAIN PROCESSING FUNCTION.
	CONNECTOR - AN ENTRY FROM, OR AN EXIT TO, ANOTHER PART OF THE FLOWCHART.		SORTING, COLLATING - AN OPERATION REQUIRING THE SORTING OR COLLATING OF ITEMS.
	TERMINAL - THE BEGINNING, END, OR A POINT OF INTERRUPTION IN A PROGRAM.		PUNCHED CARD - ALL VARIETIES OF PUNCHED CARDS.
	COMMUNICATION LINK - THE TRANSMISSION OF INFORMATION FROM ONE LOCATION TO ANOTHER.		
	ANNOTATION - THE ADDITION OF DESCRIPTIVE COMMENTS OR EXPLANATORY NOTES AS CLARIFICATION.		FLOW DIRECTION - THE DIRECTION OF PROCESSING OR DATA FLOW.

Figure 1. Flowchart symbols and what they represent.



is included here because the unique nature of the district studied has implications regarding interpretations of the findings of this study. This study, as was mentioned earlier, reports in detail only on those subsystems of the district which contain extensive formalized information flows. The following section shows how the various parts of the system are interrelated and gives information on subsystems not containing formalized flows. Without reading this section describing all the departments of the system and their interrelationships, a reader could be left with an amorphous impression of the district.

The district studied is more than just a medium-sized urban school district as defined in section II above. Its contractual relationships with other school districts enables some of its departments to provide services on a larger scale than if the district were self-contained. The fact that the district has the potential to increase the amount of its provision of such contractual services has implication regarding the extent to which it, unlike an isolated medium-sized urban district, would be able to introduce data-processing innovations.

General Characteristics of the District

The Saskatoon Public School District No. 13 is responsible for providing for the educational needs of public school children within the boundaries of the city of Saskatoon. The system provides the first eight years of education formerly called grades one to eight but now named Divisions one, two and three. A separate school system which serves students of the Roman and Greek Catholic faiths exists in Saskatoon. The Saskatoon Public School System also provides services on a fee basis for a number of students from other school districts such as Saskatoon East School District and Saskatoon West School District which

each border the city as well as for some students from the Saskatoon Separate Schools, the Department of Indian Affairs and other centers.

Other characteristics of the district that are worthy of note include the following.

1. Pupil enrollment numbers 15,416 (June 30, 1968) with a projected enrollment of eighteen thousand by 1971. The number of non-resident students was 241 for the 1967-68 school year.

2. The system contains thirty-nine schools in three areas with thirteen schools in each. The total number of classrooms is 579 which includes forty-two special classrooms.

The district also provides services to the Saskatoon Collegiate School District. Arrangements between the two boards provide for the following relationships:

> The Saskatoon Collegiate Institute Board has an agreement with the Public School Board for the provision of the following services:
>
> 1. Office accommodation for the administrative and supervisory staff, where this is available in the present School Board Office building. (Actually, the Collegiate academic offices have had to be housed in the Avenue Building and in Hart House.)
> 2. The services of the Saskatoon Public School Secretary-Treasurer and Director of Education.
> 3. The services of the Saskatoon Public School Business Division.
> 4. The services of the Saskatoon Public School Maintenance and Caretaking Departments, together with maintenance facilities and storage space at 105 Avenue G South.
> 5. The services of the Director of Facilities.
>
> The Collegiate Board, in turn, compensates the Public School Board by payment of a fixed amount for rentals, a percentage charge for services of administrative and supervisory personnel, and the

actual cost of maintenance services with a fifteen percent surcharge.[7]

Administrative Organization of the District

The present administrative organization is the result of a major reorganization which took palce in September, 1965. Figure 2 sets out this present plan of administration.[8]

The system is organized into six departments which come under the general oversight of the Director of Education who is the Board's chief executive officer and who for the time being also performs the duties of the Superintendent of Public Schools. Four of the departments comprise the Academic Division and two comprise the Business Division. Each department is briefly discussed below under the appropriate division.

Academic Division. The Academic Division includes the following departments: Instruction; Guidance and Special Education; Area Superintendents.

1. Department of Instruction. The Department of Instruction is headed by the Director of Instruction and staffed by a number of supervisors and consultants. The supervisors and consultants include the following: Art, Music, Physical Education, Library, and Assistant Library Consultants.

---

[7]F. J. Gathercole, "Saskatoon Collegiate Institutes, Report of Director of Education" (Saskatoon: Saskatoon Public School District No. 13, October, 1967), p. 25. (Mimeographed.)

[8]F. J. Gathercole, "Saskatoon Public Schools, Report of the Director of Education" (Saskatoon: Saskatoon Public School District No. 13, October, 1967), p. 14. (Mimeographed.)

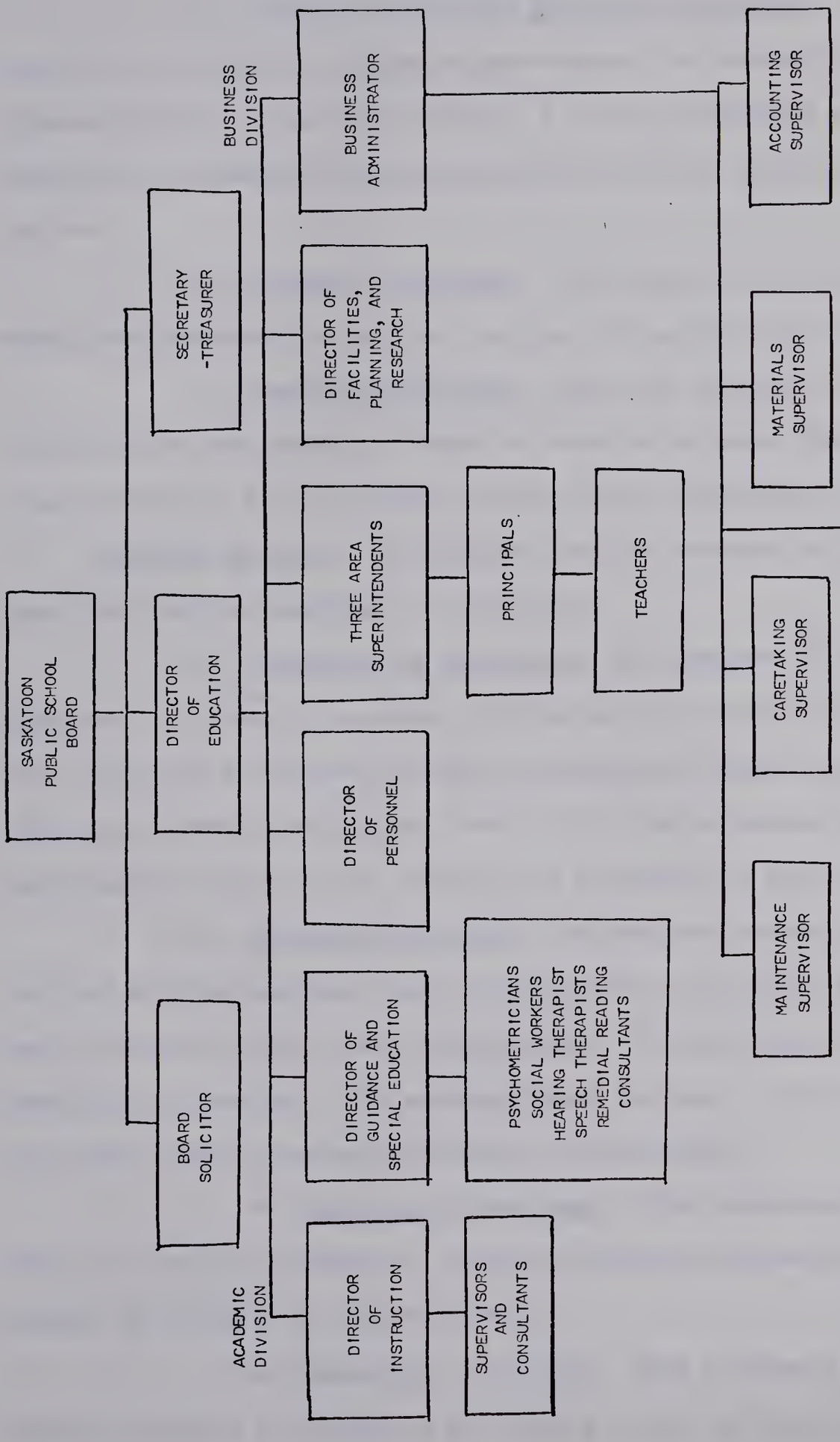


Figure 2. Administrative organizational chart: Saskatoon Public Schools.

2. Guidance and Special Education Department. This department is headed by a Director who oversees the work of four Psychometricians, three Social Workers, a Hearing Therapist, a Speech Therapist, two Remedial Reading Consultants and three Remedial Reading Teachers.

3. Personnel Department. The Director of Personnel heads this department, which also includes a Personnel Records Clerk.

4. Area Superintendents. There are three Area Superintendents who are Department Heads in charge of an area. Each Area Superintendent is a line officer over the School Principals in his area.

Business Division. The Business Division includes the Business Department and the Department of Facilities.

1. Department of Facilities. The Director of this department is primarily concerned with the capital expenditures of the Board necessary to provide new school buildings and improvement and addition to existing buildings. Most of his time is devoted to the development of plans and the obtaining of equipment for new schools.

2. Business Department. The Business Administrator is the Head of this department and he oversees the work of five sub-departments, which are usually called departments. Each sub-department is headed by a supervisor. The sub-departments include: Maintenance, Caretaking, Rental Services, Materials, and Accounting.

a) Maintenance Department. This department has a Supervisor and two Assistants. A total of thirty tradesmen and other workmen are employed in the department.

b) Caretaking Department. This department is headed by the Supervisor of Caretakers and employs a staff of thirty-eight

Head Caretakers and thirty-eight Assistant Caretakers.

c) Rental Services. A Rental Services Officer is employed for the purpose of making school facilities available to the community for educational and recreational purposes.

d) Materials Department. This department is headed by a Materials Supervisor. Purchasing operations for the Board are carried out within this department.

e) Accounting Department. This department is headed by the Accounting Supervisor. A Payroll Clerk is employed in the department as well as an Accounting Machine Operator and other clerical help.

Delimitations of the Study

1. The study was of one system, The Saskatoon Public School System.

2. The study was delimited to and focused upon the forms used in the system, that is, no attempt was made to study informal channels of information flows.

3. The study focused on the central office, its internal information procedures and its information relationships with three selected typical schools and the Provincial Department of Education.

Limitations of the Study

This study is a survey of one particular system. Its findings are applicable to that system only and no generalizations of its findings to other systems should be made. However, the procedures used in this study may be applied to the study of information processing and data flows in other districts.

V. SUCCEEDING CHAPTERS

Answers to the Specific Research Questions

The five specific research questions stated at the beginning of this chapter are answered in chapters III, IV, V and VI of the thesis. Chapters III, IV and V answer the first three questions as they relate to the specific sub-systems dealt with in these chapters. Findings in the chapters are presented in the order in which the first three questions were asked. The last two questions being of a more general nature are answered in a separate chapter. The first section of chapter VI deals with question four, and the second part relates to question five.

Succeeding Chapters

The remainder of the thesis will be organized in the following way.

Chapter II. Collection and Treatment of Data.

Chapter III. Personnel Department Data Practices.

Chapter IV. Pupil Accounting Data Practices.

Chapter V. Business Division Data Practices.

Chapter VI. Evaluation of Present Procedures and Implementation of a Machine-Oriented System.

Chapter VII. Summary and Suggestions for Further Research.

CHAPTER II

COLLECTION AND TREATMENT OF DATA

I. THE APPROACH USED AND THE DATA REQUIRED

Bases of the Approach

The approach used to carry out this study was based upon the approach used by the Bureau of Educational Research (B.E.R.) at the University of Oregon when it carried out a survey as a prerequisite and part of the planning procedures of the Oregon Total Information System Project (O.T.I.S.).

Project O.T.I.S. is operating under a planning grant from the United States Office of Education. It is an organization formed for the purpose of developing a statewide education information system for Oregon.[1]

As a prerequisite and part of the planning procedures of the O.T.I.S. Project, the B.E.R. at the University of Oregon conducted a survey of the current educational data needs and practices throughout Oregon. The B.E.R. Survey accomplished the following: surveyed twenty-one representative districts, collected five hundred forms, documented procedures and work flows, and produced item analysis and frequency distributions. This analysis and documentation is included in Volume II of the O.T.I.S. Operational Proposal.[2]

---

[1]Jesse W. Tonks, "General Education Management System," A.E.D.S. Monitor, 5:6-7, April, 1967.

[2]Project O.T.I.S., "Oregon Total Information System - A Proposal to the U.S. Office of Education, Title III E.S.E.A. Volume II -- Appendix I" (Eugene, Oregon: Oregon Total Information System, July, 1967),

The Approach

The process used in carrying out this study consisted of such activities as acquisition of forms used in the system, classification of forms into the five areas mentioned earlier, and personal interviews with the administrative overseer of the process and then with the clerk or professional who actually collected, assembled and utilized the information.

Extensive written and mental notes on the various processes investigated were made. These notes and the forms utilized in the processes they described formed the basis of the analysis and reporting stage of this study.

The approach described above is the approach used by the B.E.R. survey.[3] The approach used in this study differs in that it deals with one system in depth rather than twenty-one in a cursory way. This study goes beyond the B.E.R. study and reports on findings related to the uses of information and the evaluation of procedures as stated by district personnel. Further, this study includes both a section on implementing a machine-oriented system, and sections which analyze selected flows in terms of decision-making points, communication links and storage file mode.

---

pp. 1-122. (Mimeographed.)

[3]R. Kershner, "Statement on B.E.R. Survey Approach" (Monmouth, Oregon: Oregon College of Education, March 12, 1968). (Unpublished Typewritten Letter.)

II. SOURCES OF DATA

The data required was of six basic categories: (1) Administrative organization of the school district, (2) Information about the formalized information collection processes, (3) Copies of the forms used by the school district, (4) Information regarding forms and the procedures involved in their use, collection and processing, (5) Statements regarding the purposes of the forms and the procedures and processes involved, (6) Statements regarding the extent to which the forms and procedures satisfied the purposes for which they were devised and used.

Part of the data was obtained from printed reports and interviews. From the Director of Education were obtained the latest annual reports, other reports and the latest staff calendar. Titles of the various reports obtained and used are included in the bibliography. Copies of forms were obtained from the various personnel interviewed. As well as the above forms, a complete set of forms was obtained from the system's stores and other distribution centers to ensure that none was overlooked.

III. TREATMENT OF DATA

Administrative overseers were interviewed and the existence of formal information processes within the various departments was established. Statements regarding the purposes of the various processes identified and selected for study were obtained. These statements were of an oral nature; extensive written and mental notes were made on them. Various reports and written statements referred to by personnel interviewed were read and notes were made. In one case a department head

offered to prepare a formal statement of uses and this was obtained from him.

Information regarding the uses of forms, the procedures and flows of information, statements of purposes, and statements regarding the extent to which purposes were met by the formal procedures and forms used were obtained. The information was obtained from heads of the six departments of the system; from the various clerks and professionals of each department; from the school principals; from supervisors of the five sub-departments of the Business Division; as well as from their clerical help and in the case of schools from the School Nurse.

Various personnel referred to by the department heads were then interviewed. Again extensive written and mental notes were prepared.

Once sufficient data was obtained, statements of uses, symbolic flowcharts and narrative descriptions of the processes studied were written. In the case of three departments - Instruction, Facilities, and Special Education, no flowcharts are presented because: (1) no formal information collection procedures were used by these departments, (2) they obtained the information they needed from other departments in final form, (3) the formal information flows in them were a slight extension of the flows in other departments, or (4) the departments dealt with information of a highly specific nature related to special or exceptional cases.

Once the findings were written up the department heads and other personnel initially interviewed were contacted again. The written reports and flowcharts were discussed with them, additional information required was obtained, and appropriate changes were made where needed.

CHAPTER III

PERSONNEL DEPARTMENT DATA PRACTICES

I. INTRODUCTION

This chapter describes the formal information collection and processing procedures of the personnel department of the school district. The recruitment procedures and record filing systems for both certified and classified personnel are presented in both flowchart and narrative forms. Immediately below is a section related to the uses of the information collected.

II. USES OF INFORMATION

Each of the following sections begins with a general statement of the objectives of the specific formal flow of information discussed. These statements are based on information obtained from interviews with appropriate district personnel. Below is a statement prepared by the Director of Personnel which outlines: the purposes for which information is gathered on teacher candidates for employment; the uses to which this information is put. The same statement applies equally well to the recruitment of classified personnel who perform supportive roles in the system.

> Information is requested, of course, to improve our recruiting procedure in order to employ the best possible teachers for the girls and boys in our schools. Information about character, personality and morals help us to determine whether or not someone is suited to teaching as we see it. Data about academic matters enables us to determine whether or not a person is a good learner and to identify areas of special interest or qualifications. Recommendations from former employers assist us in evaluating a person's sense of responsibility, flexibility, and devotion to a task. In addition, by Board policy we require a medical examination, a birth

certificate and a teaching certificate. It is to the employee's advantage as well as the Board's to have this information officially recorded. A social insurance number and an income tax exemption form are required to meet governmental regulations.

We attempt to get to know our applicants so that we may identify their strengths and weaknesses and then to make appointments according to the needs that become apparent in our schools. Our task as we see it is to recruit teachers to meet our needs and then to place them in positions where they can be most effective.[1]

III. CERTIFICATED PERSONNEL FLOWS

A. Recruitment Procedures

Teacher recruitment and selection practices are vital aspects of providing quality instruction in the district. Because a large portion of the district budget is devoted to personnel, the greatest efficiency and effectiveness in instruction occurs when the educational objectives are defined and the persons most qualified to promote those objectives are recruited to fill staff vacancies. The formalized system of recruitment and selection is designed to give a higher degree of assurance that the district is meeting its obligations to provide quality staff members at all educational levels. The formalized recruitment procedures of the district are depicted in Figure 3 and are explained as follows.

Step 1. Letters of Inquiry

Letters of inquiry from candidates for positions are received by the personnel office. Interest in initiating such requests can be generated by district personnel, the inquirer, placement officers at Universities, or other sources. Persons sending a

---

[1]E. E. Newton, "Statement on Information Uses" (Saskatoon: Saskatoon Public School District No. 13, June 5, 1968). (Unpublished Typewritten Letter.)

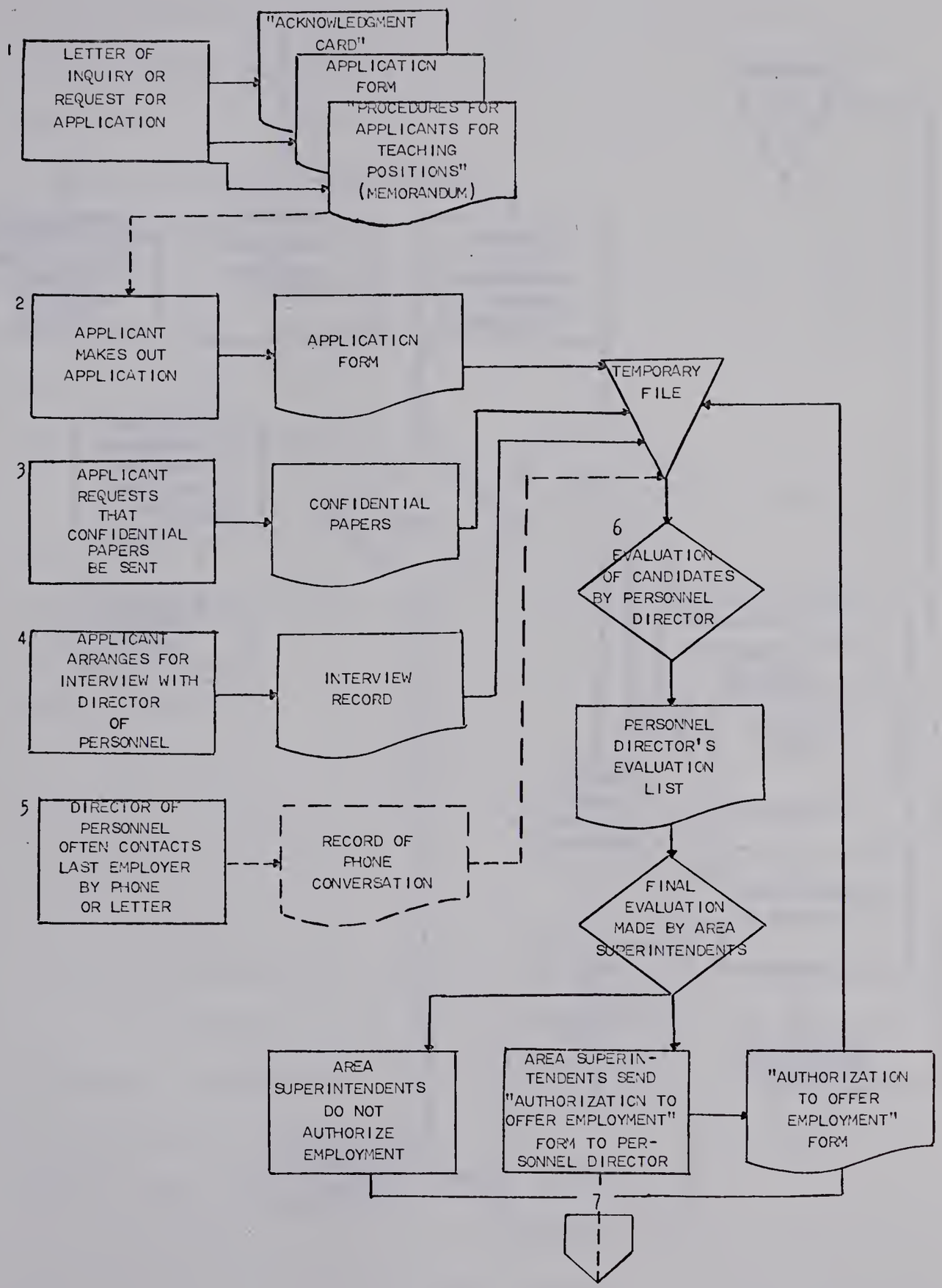


Figure 3. Recruitment procedures for certificated personnel.



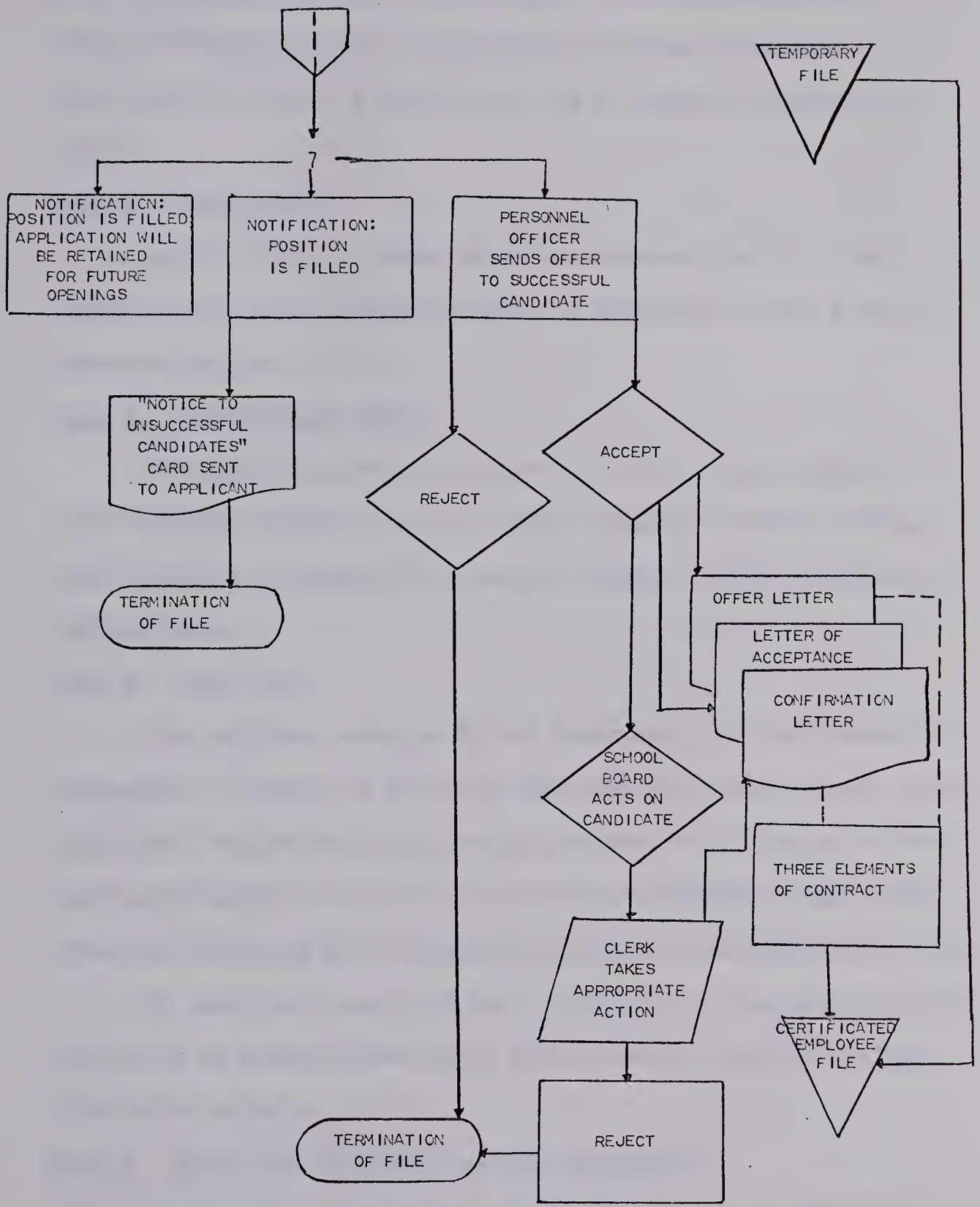


Figure 3. Continued.



letter of inquiry are sent three items: an 'Acknowledgment of Letter of Inquiry' card; a memorandum concerning 'Procedures for Applicants for Teaching Positions;' and a 'Teacher's Application Form.'

Step 2. Application

Applications are received in the personnel office. The applicant is sent an 'Acknowledgment of Application' card from the personnel office.

Step 3. Confidential Papers

The applicant, if an experienced teacher, sends copies of recent Superintendent's reports to the Personnel Director. These are recorded in temporary file and the orignial copies returned to the applicant.

Step 4. Interview

The applicant arranges for an interview with the Director of Personnel. A 'Notice of Interview Date and Time' form is sent to the applicant. The Director of Personnel records the interview on the four-page 'Record of Interview' form which is completed during and after the interview and attached to the back of the application form.

In practice, steps 2, 3 and 4 may not be in sequence, but all three must be accomplished before the applicant is given consideration for a position.

Step 5. Phone Call or Letter to Past Employer(s)

Confirmation or negation of other data can be verified by a phone call to past employers if the applicant is an experienced teacher. Probing in this verbal encounter will often provide insight into the character and qualifications of the candidate that

are not available from other sources. The Director of Personnel may record the results of this call, however, no set form is used for this purpose. The record then becomes part of the applicant's temporary file. Instead of phoning, the Director of Personnel may send a form to the last employer. This form requires the last employer to give an estimate of the applicant's qualifications and becomes part of the temporary file.

Step 6. Offer of Position

The Director of Personnel on the basis of the information he now has in the temporary file makes up a list of applicants interviewed. This list is structured to contain the following information: applicant's name, age, and type of certification; grade level desired or suited for; number of years of experience at what grade levels and where; Director of Personnel's comments and recommendations. Copies of the lists are given to the three Area Superintendents who then on the basis of needs expressed by Principals make selections. While this list is part of the formal process the Area Superintendents are often involved in the process prior to their receipt of the list; often, for example, the Director of Personnel will involve an Area Superintendent in the hiring procedure at the interview stage. The Area Superintendents also keep the Director of Personnel informed as to their staff requirements.

Steps 7 and 8.

Upon receipt of an 'Authorization to Offer Employment' form from an Area Superintendent the Personnel Director clips it to the appropriate file and gives it to the Personnel Clerk who sends an

'Offer of Position Letter.' The authorization form is kept in the temporary file; the Area Superintendent also keeps a copy for his files. The Candidate receives a 'Letter of Acceptance' form with the 'Offer of Position Letter.' The applicant signs the 'Letter of Acceptance,' returns it, and his name is submitted at the next Board meeting for employment. After acceptance by the Board the applicant is sent a 'Confirmation Letter.' The exchange of the three letters; offer, acceptance, and confirmation, when completed, constitute a contract, i.e. the process fulfills the legal requirements of the Province.

Together with the 'Confirmation Letter' the applicant receives a 'TD1 - Income Tax Form' which he returns; a medical form which his physician fills out and sends to the School Board Medical Officer who keeps a confidential file. The applicant is also requested to send: birth certificate, highest provincial teaching certificate, and University diploma; these are recorded and returned. The applicant is also requested to provide his Social Insurance number. All of this information except the medical form is filed together with the information already in the temporary file into the certificated employee file.

In the event that a 'Letter of Offer of Employment' is rejected, or the expiration date of the offer has passed, the candidate's file is terminated and the next most qualified candidate authorized by an Area Superintendent is sent an 'Offer Letter.'

Worthy but unsuccessful candidates are notified that all positions have been filled but that their records will be maintained, and they will be given consideration if a new vacancy should

occur. This is true particularly in the cases of married women who reside in the community and who are waiting for a teaching position in that system.

Unsuccessful people are sent a yellow card which informs them that all positions are filled and that their applications have been removed from active file. Their files are terminated, but the Personnel Clerk keeps a list of their names for approximately one year, so that in the event that they apply again she can inform the Personnel Director of their previous unsuccessful application. These particular unsuccessful applicants are usually not considered as candidates again.

B. Certificated Employee File

The certificated employee file is a method of maintaining personnel files in the school district. It contains all documents that relate to certificated personnel. Some documents are required by Provincial statute and Federal Law while others are district requirements. Figure 4 displays the contents of the employee record file. Discussion of the various records involved is given below.

1. Employee Record Card

Finger-tip access to the most pertinent data about employees is accomplished by use of an employee record card in a Kardex visible division 'tray-file' system. Kardex systems are widely used in the business world and are marketed by Remington Rand Limited. The record cards used in such a system are called Kardex cards. The Kardex card used by the district employs a color code to indicate 'Staff Status' and a space is provided

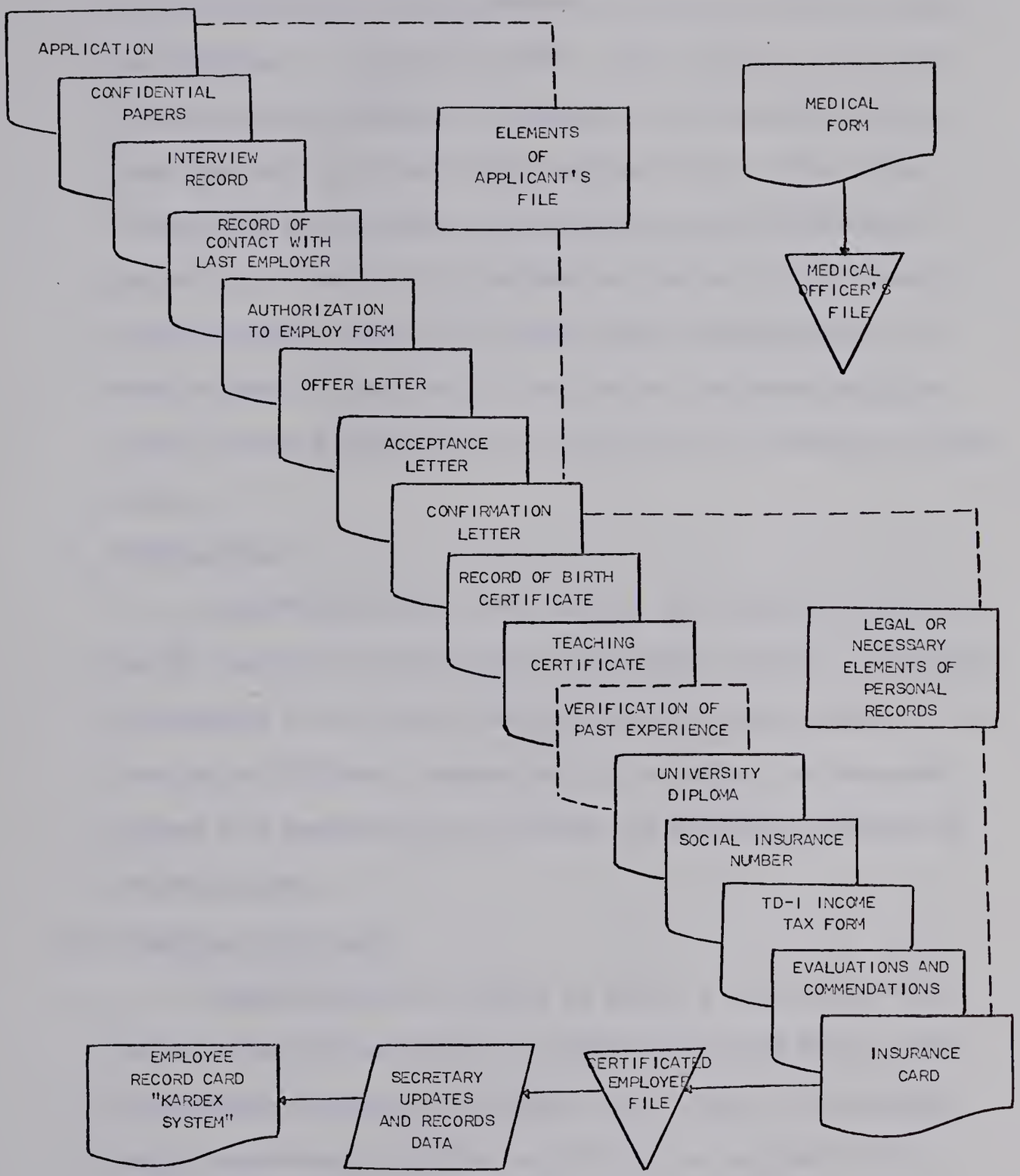
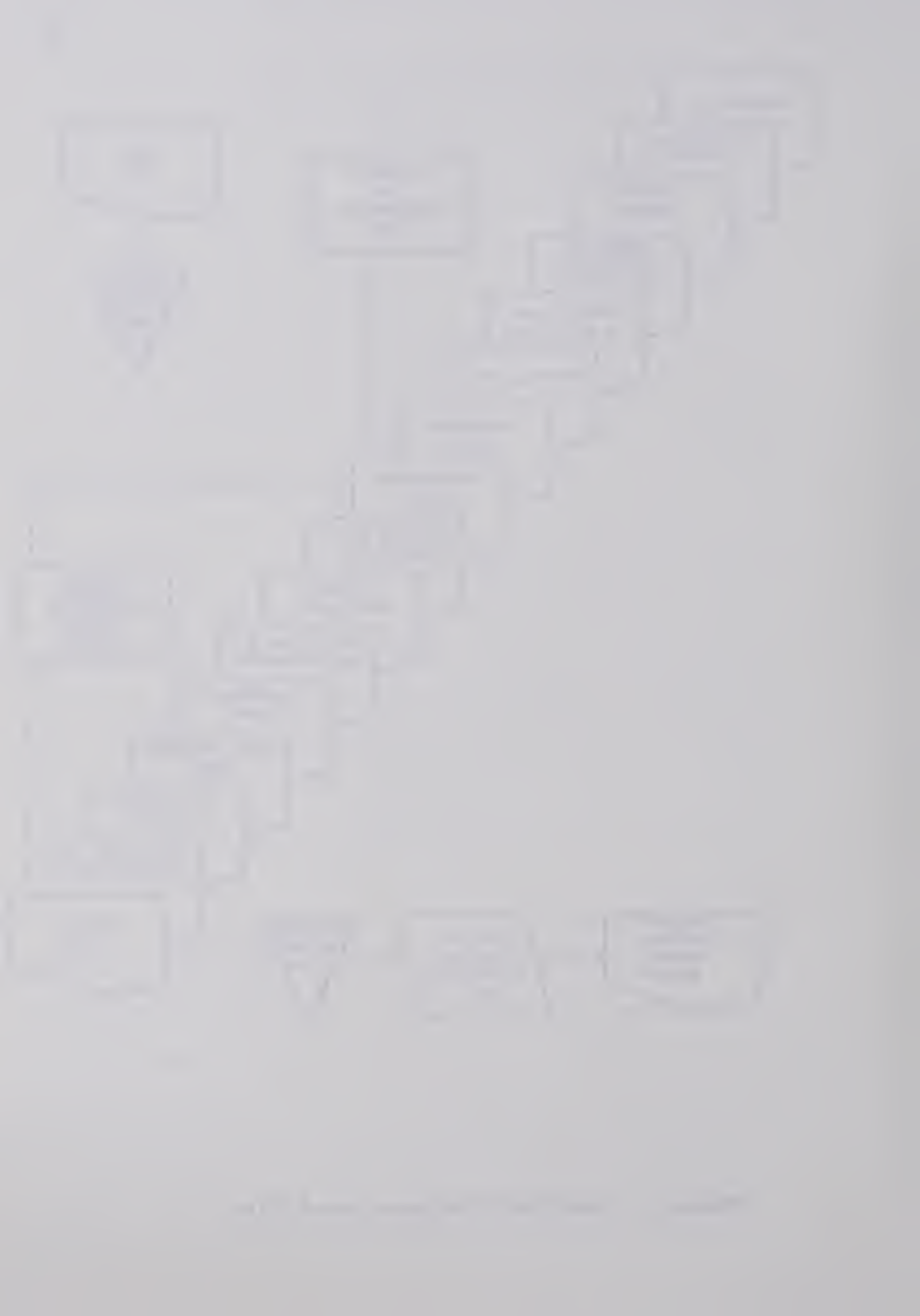


Figure 4. Certificated employee record file.



on the card where a school number is entered for those employees assigned to a specific school. Other spaces on the card facilitate the recording of information obtained from the various documents contained in the employee record file. Room is provided for recording evaluations, teaching experience, and salary. The cards are updated as changes in experience, qualifications, salary, and other status changes occur. It must be kept in mind that all entries on the Kardex employee record card are backed up and verified from the employee record file.

2. Medical Form

The medical form is not kept in the employee record file but in the files of the School Board Medical Office. Any teacher employed must be free from communicable tuberculosis. It is the Medical Officer's responsibility to inform the Personnel Office if a teacher is not suitable for employment because of health reasons.

3. Teaching Certificate

Every teacher who serves on either a full or part-time basis in the Public Schools of Saskatchewan must hold a valid Saskatchewan teaching certificate. The number of the highest valid Saskatchewan teaching certificate is recorded on the Kardex employee record card.

4. Verification of Past Experience

The final determination of placement on a salary schedule requires verification of past experience. This information is provided by past employers and retained in the file and recorded

on the Kardex employee record card.

5. Evaluations

Adequate performance in accordance with the assigned duties and responsibilities of the position is expected of all employees. In the district it is common to have at least an annual evaluation, particularly for those teachers in their two probationary years. Evaluations by Area Superintendents are typed on blank three by five inch cards and attached to the Kardex record card holder.

6. TD-1 Form

Fiscal accounting requires a dependency statement for tax purposes. While this form is initially a part of the employee record file it is sent along with other payroll status information to the Payroll Clerk.

Many of the forms in the employee record file carry expiration dates or are subject to adjustment. These items are voided as they expire, or are adjusted and are removed from the file and replaced by currently valid documents. The Kardex employee record card is then updated as required.

Other forms, such as evaluations, provide a cumulative, sequential development and are retained even though more current documents have been submitted.

IV. CLASSIFIED PERSONNEL FLOWS

A. Recruitment Procedures

District Personnel feel that the best assurance that the most qualified personnel are recruited rests with a formal, organ-

ized method of advertising openings and selecting the most qualified candidates. The wide variety of supportive positions indicates the need for different instruments for collecting information and for evaluating qualifications.

The following describes in a general way the classified personnel flow of the system studied. The formal system is basically the same for all job classifications, however, the application forms vary according to job classification. The letter of offer of employment also is particular to the job classification. For example, there are different forms for central-office stenographers, school stenographers, maintenance, custodial, bus drivers, and so on.

Responsibility for recruitment of classified personnel is divided throughout the system. The Director of Personnel is responsible for the recruitment of classified personnel for the academic division of the school system. The Business Administrator is responsible for recruitment of personnel in the business division.

The formalized system of the school district's recruitment procedures for classified personnel is portrayed in Figure 5 and is explained as follows.

Step 1. Application Form

Completion of the appropriate application forms initiates the process of hiring classified employees.

Step 2. References

References are solicited and placed with the application in a temporary file.

Step 3. Vacancies

Non-contractual vacancies occur at any point in the year.

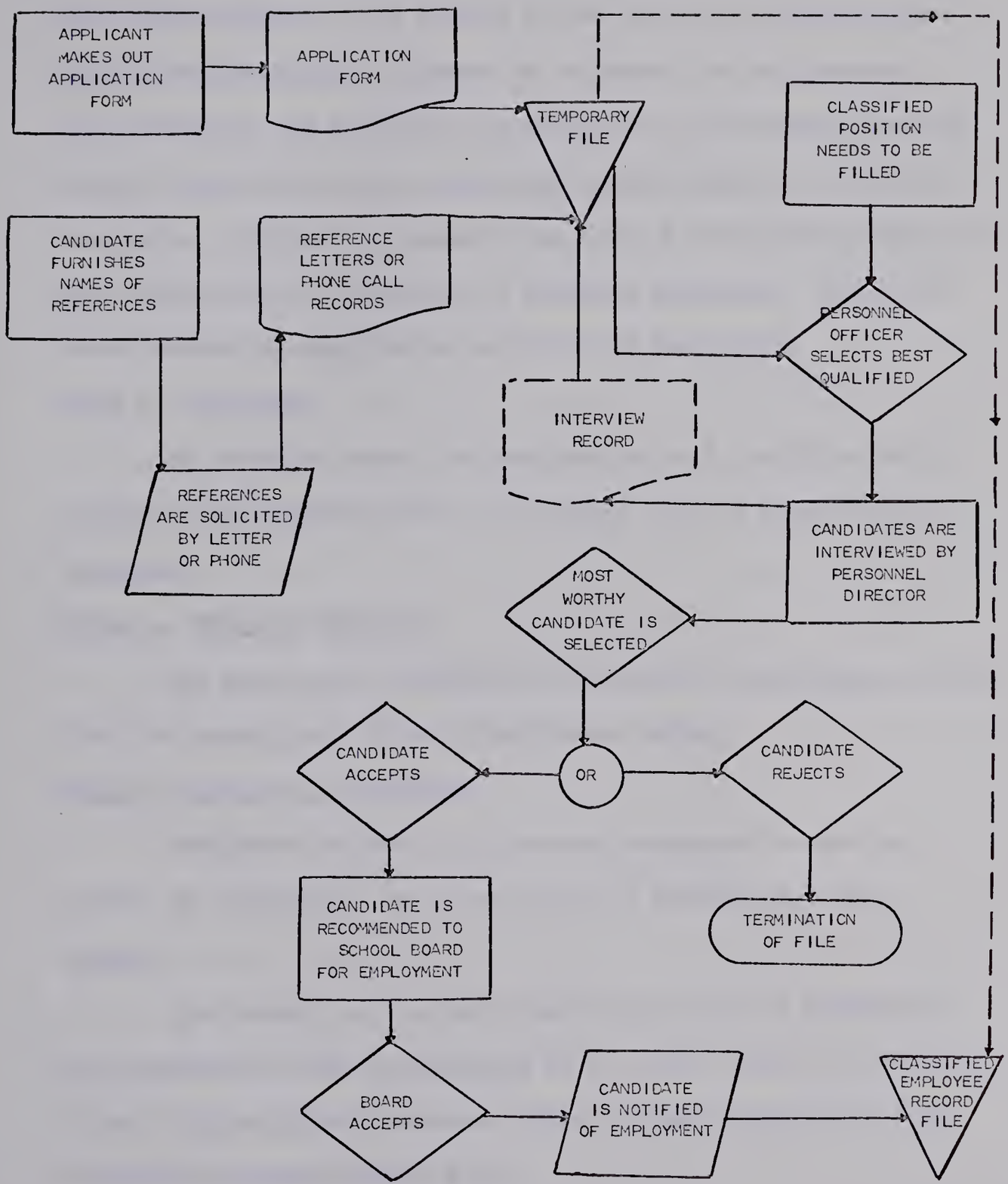


Figure 5. Recruitment procedures for classified personnel.



As openings occur, the temporary file is evaluated and the best qualified applicants are invited for an interview with the appropriate administrator: Director of Personnel, or the Business Administrator. If a position applied for is not available at the time of application, the application is held until a position is available. Applicants, however, are asked to notify the holder of his application if a position is accepted elsewhere. Upon such notification the application and file are terminated.

Step 4. Interview

An interview record is completed on each candidate and is placed in the temporary file. No special form is used for this purpose.

Step 5. Offer of Position

The most worthy candidate is selected for employment and is sent the appropriate offer of employment letter.

Step 6. Letter of Acceptance

Candidates offered positions are requested to send in a letter of acceptance. No special form is provided for this.

Step 7.

Upon receipt of the above-mentioned letter of acceptance the candidate's name is submitted to the School Board for ratification. The candidate's temporary file is then transferred to the classified employee record file.

Step 8.

An interdepartmental memorandum regarding appointment is completed in triplicate. One copy is filed in the employee record file, another is sent to the Payroll Clerk and a third is either extra or

may be sent to the Head of the department to which the employee has been assigned.

B. Classified Employee Record File

The classified employee record file contains elements similar to those of the certificated employee record file. It contains the following forms: application appropriate to classification, interview record, reference letter, acceptance letter, record of birth certificate, social insurance number, and a TD-1 form. There are no set forms for the interview record or the acceptance letter. The nature of the above forms was discussed earlier under the certificated employee flow narrative. There are two major differences between the classified and certificated files: first, the certified employee file contains almost twice as many documents; second, the classified employee flow does not terminate with an employee record card as does the flow for certificated personnel. Figure 6 displays the contents of the classified employee record file.

V. ANALYSIS OF DATA PROCESSING FLOW

This section presents an analysis of the recruitment procedures flow for certificated personnel that was reported on in section III A of this chapter and depicted in Figure 3.

The analysis relates to three major processing functions: decision-making; communication links; and storage.

Decision-Making

An analysis of Figure 3 reveals four decision-making points: two in step 6 and two in step 7. They were in order of occurrence as follows: (1) The Personnel Director makes a decision regarding the

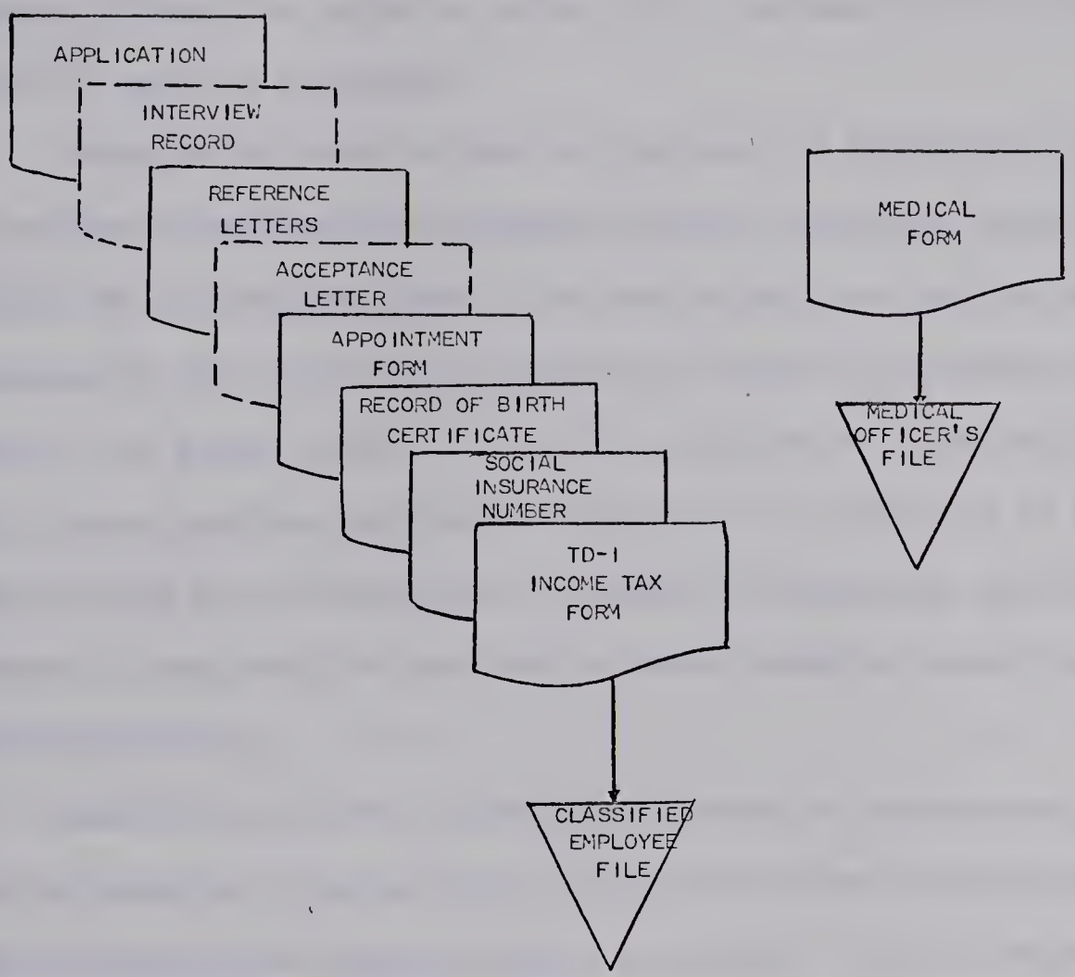


Figure 6. Classified employee record file.



evaluation of candidates; (2) The Area Superintendents make decisions regarding employment; (3) Candidates selected for employment decide whether to accept or reject an offer; (4) The School Board decides to accept or reject a candidate.

Decision one above is made on the basis of information gathered and opinions formed by the Personnel Director during the steps completed previous to the decision point. His evaluation also relates to his knowledge at that point of the particular needs of the system. If, for example, the system needed five reading teachers at a particular level and if there were ten applicants 'qualified' for that type of position, he would rank the ten candidates in order of suitability and state which of them, if any, would be unsuitable, least suitable or most suitable for the positions.

Decision two above is made on the basis of decision one and the needs of schools as expressed by Principals to Area Superintendents, or as perceived by Area Superintendents themselves. An Area Superintendent makes a decision to hire or not to hire. Their decision is more crucial in that once they decide to hire a particular candidate and the candidate accepts, the system is committed to the employment of that candidate for one year at which time a tenure decision is made. It is also a final decision to hire since once a candidate is offered a position the Board usually automatically concurs with an Area Superintendent's decision.

Decision three, the first of two, in step seven is made by a candidate who has been offered a position. The candidate decides to accept or reject the offer of employment. The candidate's decision might be based on how suitable he considers the placement offered him to

be as well as other personal considerations. His decision is again characterized by finality, that is, if he accepts in virtually all cases he is accepted by the system and is then under contract for one year.

Decision four, the last in the recruitment flow is made by the Board. The Board's decision is virtually always one of acceptance. It is based not on information gathered in the flow but solely on the confidence that the Board has in the decision-making of its administration.

Communication Links

An analysis of the recruitment flow reveals nine communication links. One in each of steps 1 and 2, two in step 6, and five in step 7. They were in order of occurrence as follows: (1) Between Candidate and Personnel Office; (2) Between Candidate and Personnel Office and Director; (3) Between Personnel Director and Area Superintendent(s); (4) Between Area Superintendent and Personnel Director; (5) Between Personnel Director and Candidate; (6) Between Candidate and Personnel Director; (7) Between Personnel Director and School Board; (8) Between Board and Personnel Clerk; (9) Between Personnel Clerk and Candidate.

In the first link the candidate inquires about employment by phone, personal contact or letter. The system gives acknowledgment of inquiry and application forms.

In the second link the candidate presents necessary completed forms to the Personnel Office and arranges for an interview with the Director of Personnel. This link involves written and oral communication. Written forms are completed by the candidate, the Personnel Director and Referees for the candidate. Oral communication takes place

between candidate and Personnel Director. Communication, both oral and written with outside agencies, takes place also at this step. Documents from Universities, documents and oral communication with previous employers are examples.

Link three involves oral and written communication between the Personnel Director and Area Superintendents. Inter-departmental communication is involved here.

Link four is a written communication from an Area Superintendent to the Personnel Director giving him authorization to employ a candidate. The communication is inter-departmental.

Link five is a written communication from the Personnel Director to a candidate consisting of an offer of employment or written notification of candidate's unsuccessful attempt.

Link six is a written communication from candidate to Personnel Office and consists of a letter of acceptance.

Link seven is a written communication from the Personnel Office to the Board recommending employment of the candidate.

Link eight is a written communication from the Board to Personnel Department authorizing employment.

Link nine is a written communication from Personnel Clerk to the candidate and consists of the Confirmation Letter.

All of the above communication links, whether oral or written, are recorded on standardized forms during the flow. Every communication link could theoretically be through paper medium with the sole exception of the personal interview between candidate and Personnel Director, but even this encounter is recorded.

Storage

An analysis of the recruitment flow reveals basically two types of storage files, permanent and temporary.

1. Temporary file. All documents completed are stored in temporary file as received on the standardized forms provided by the system and those documents received from outside agencies in the form received. The temporary file is terminated when at any point in the flow the candidate is rejected or rejects employment.

2. Permanent file. The permanent file contains the same elements as the temporary file. The temporary file becomes permanent upon completion of the contract between candidate and system. The permanent file forms the basis of the employee record file and summary information is taken from it and recorded in a 'Kardex' record system. This process is described in section III B of this chapter and is depicted in Figure 4.

CHAPTER IV

PUPIL ACCOUNTING DATA PRACTICES

I. INTRODUCTION

This section of the thesis describes the formal information collection and processing procedures related to pupil accounting in the district. Five flows are dealt with: (1) Enrollment, (2) Registration, (3) Attendance, (4) Student Health Records, and (5) Grade processing and Reporting. All of the above except registration are presented in both narrative and chart forms. Below is a section related to the uses of the information collected.

II. USES OF INFORMATION

Each of the following sections either begins with a general statement of the objectives of the specific formal flow of information presented or includes such statements of uses within the narrative as particular forms or procedures are discussed.

General statements made by officials of the district are presented below. These statements relate to the uses of pupil personnel information.

In the "Principal's Handbook" the following statement is made regarding the purposes and uses of forms, records, reports and formal procedures.

> Sound administration requires that adequate records should be kept and that information from these records should be passed on, from time to time, to those officials within the administration who may need it. A school or a school system can be administered efficiently only if ample, meaningful, and accurate information which shows the functioning of the school or school system <u>in toto</u> or in each of its parts is readily available to those charged with admin-

> istrative responsibility. To this end, then, teachers, principals and central office administrative personnel must systematically collect, organize, file, use and report as required, information pertaining to the pupils they teach, the school activities for which they are responsible, and the personnel who come under their control or supervision.
>
> Economy in record-keeping and reporting is made possible through the use of standardized forms. This applies both within the school itself, and on a system-wide basis.[1]

There are two categories of pupil information collected and used in the district. The first type is information about individual students. The second type is summary information about groups of pupils. Uses of the two categories are presented below.

Information about Individual Students

Information about individual students is used by classroom teachers to assist in planning classroom activities, grouping pupils, counseling or guidance, and reporting to parents. It is used by the school office as a permanent record of each pupil's school status and performance; in preparing reports about groups of pupils; and as a basis for administrative action in determining each pupil's tuition or other charges, eligibility for school activities and so on. It may be used by counselors and social workers as a basis for counseling about personal and social problems. Other members of the professional staff of the school or the district may utilize this information in carrying out their particular functions.

Summary Information about Groups of Pupils

Summary information about groups of pupils is used by administrators as a basis for: planning the curriculum; determining attend-

---

[1]F. J. Gathercole, "Principal's Handbook" (Saskatoon: Saskatoon Public School District No. 13, August, 1961), p. 10. (Mimeographed.)

ance areas; assigning teachers to schools; scheduling teachers into classes; scheduling pupils into classes; and reporting about pupils to community, Provincial, and Federal agencies. Provincial and Federal agencies may use summary information as a basis for distribution of funds and recommendations for legislative action.

III. ENROLLMENT FLOW

The formalized enrollment procedures used in the district's schools are depicted in Figure 7 and are explained as follows.

Step 1.

Students, usually accompanied by parents, come to school to request enrollment. Enrollment of preschool children is begun in the spring before the beginning of the school year in which they are to begin attendance. Each spring a 'Message to Parents of Preschool Children' is sent to parents of preschoolers. The letter outlines enrollment requirements and asks parents to complete a form attached to the letter and return it to the Principal of the school in their attendance area. The form contains basic information required by the Principals to initiate enrollment procedures. Once Principals receive the form, procedures which closely follow the general enrollment procedures outlined below are begun.

Step 2.

The student's residence is checked to determine if he resides within the service area boundaries for the school at which admission is requested. The religion of the family is ascertained. If the child is a beginner he must satisfy the age requirement for beginners or if an early entrant then approval from the Director of Guidance and Special

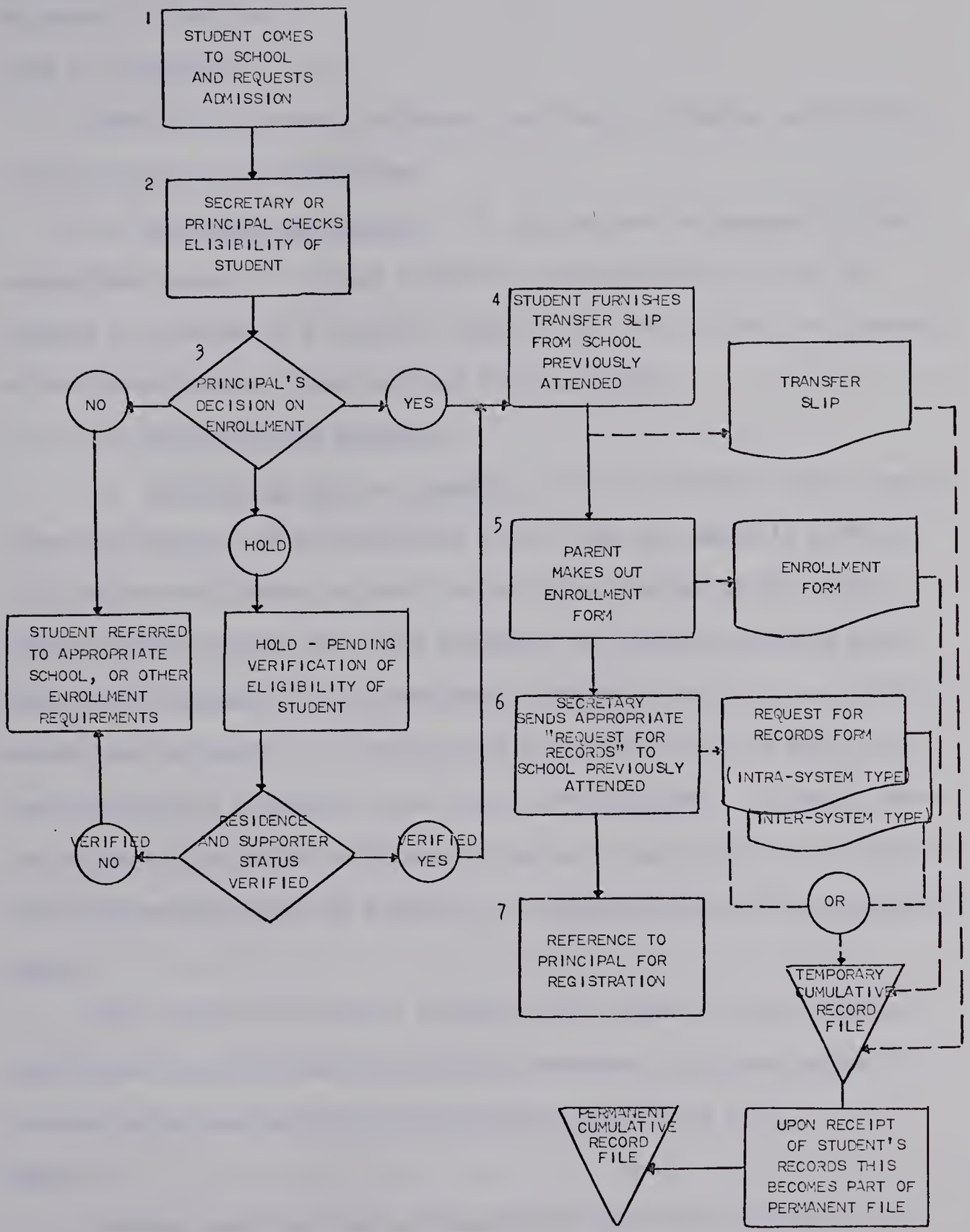


Figure 7. Enrollment flow.



Education is required.

Step 3. Decision

Based upon place of residence, and family religion, one of three courses of action is undertaken:

1. Enrollment is Denied. (a) The student is directed to the appropriate school. If Roman Catholic or Greek Catholic, then the student is directed to a Separate School. (b) The student is apprised of the action he must take in order to be enrolled.

2. Enrollment is Accepted.

3. Decision is Held or Reserved. This is usually done in cases where the parents are contemplating a move into the school's service area in the near future and want to start the student in the school before actually moving in. This situation may require checking with real estate companies, and subsequently approval from the Area Superintendent may be sought. In cases where the Principal is in doubt about the residence of a student he may check with City Hall. In cases where tax support is in doubt the Principal may also call City Hall to determine whether the family is a Public or a Separate School tax supporter.

Step 4.

The student furnishes a transfer slip called a 'School Leaving Certificate' from the school previously attended. Students without transfer slips are enrolled provisionally without the slip.

Step 5.

Parents complete the enrollment form entitled 'Information for School Records.' One enrollment form will satisfy the requirements for families with up to six children. This form, when accomplished and processed is filed in the temporary cumulative record folder.

Step 6.

The secretary sends a 'Request for Records' form to the school previously attended. If the request is to a school in the district the form entitled 'Request for Cards and Folders' is sent. If a request is sent outside the system the form 'Request for Information Respecting New Pupil' is sent.

Step 7.

The Principal then completes actual registration and records the registration in his 'Student Admission and Withdrawal Book.'

IV. REGISTRATION FLOW

The enrollment procedure in the district takes care of registration requirements. As yet there are no electives for students and hence all students, once assigned to a particular classroom, are in effect registered in a program common to that of the other students assigned to that classroom. Because there is no choice regarding registration there is no need for an extensive formal registration flow procedure. Children are directed to appropriate classrooms upon school opening in the fall and are registered by the respective classroom teachers.

The classroom teacher initially keeps a temporary register. About September fifteenth, when the allocation of pupils to the respective classrooms has been completed and most pupils have returned from vacation, these attendance records are transferred to the Classroom Register.

The Classrom Register is a record required by the Department of Education. It is not only a current record of attendance but a legal document as well. As a legal document it may be called into court if a

parent or guardian has been charged with infractions of the School Attendance Act.

> It has an archival purpose, too, and teachers would be amazed at the number of occasions on which old registers must be consulted for information about pupils and teachers. Thus it is important that all records in the register be kept neatly, accurately, and completely.[2]

The next section deals with the Attendance Flow.

V. ATTENDANCE FLOW

There is considerable variety in the attendance process among schools of different size and within schools, depending on the grade levels concerned and the extent to which departmentalization is employed in the school.

Since most elementary classrooms are of a self-contained type wherein each child is under the responsibility and direct control of one teacher for the major portion of the day, the elementary school attendance process is much simplified and abbreviated.

However, with respect to grades seven and eight the organization is often that of departmentalization and in these situations various methods of reporting absences to home-room teachers, who still retain responsibility for attendance accounting for their home class, have been devised, often using improvised forms. There is no system-wide policy or standard procedure for this process.

Figure 8 depicts the Attendance Flow procedures used in the district. The procedures are explained below.

---

[2] Ibid.

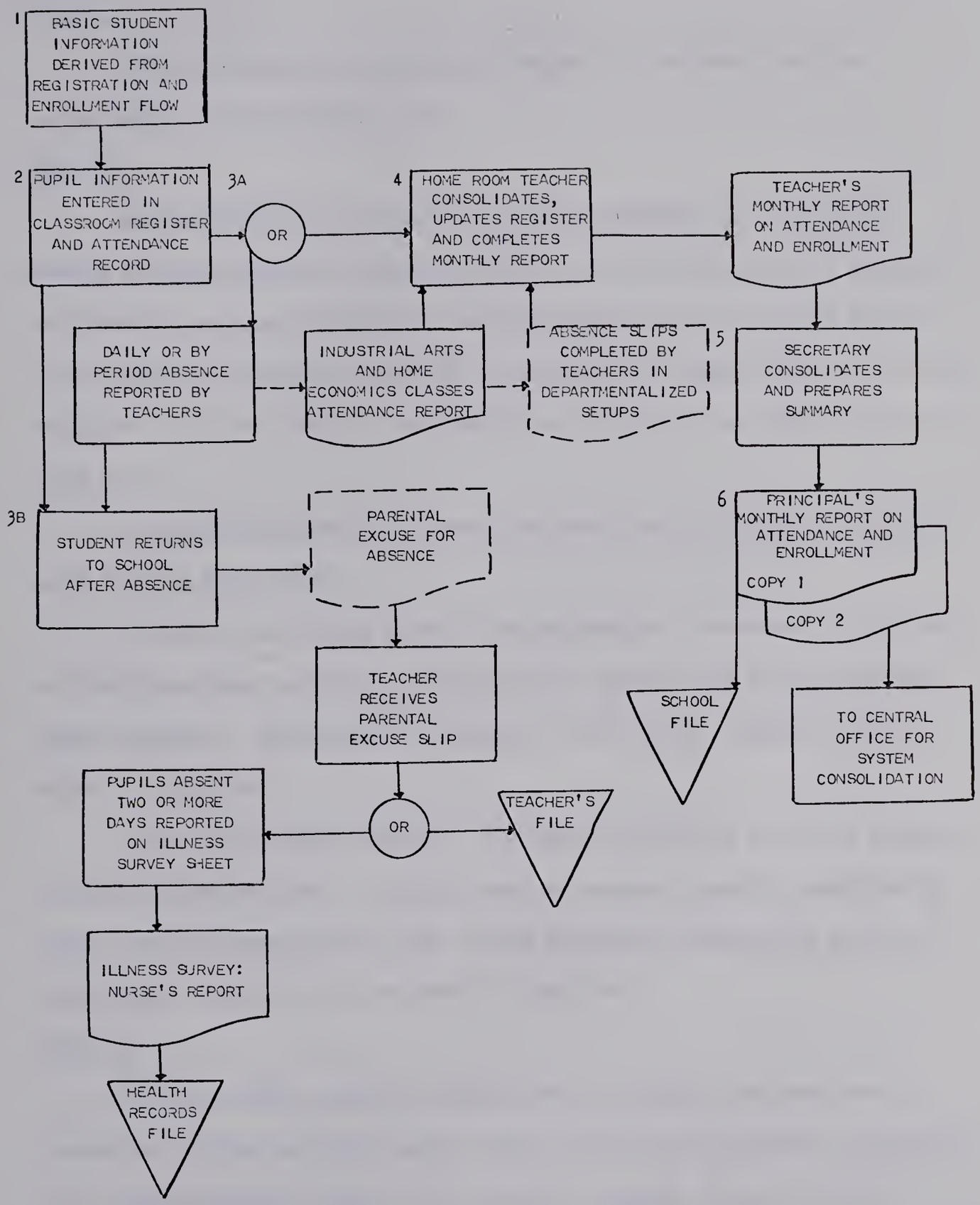


Figure 8. Attendance flow.



Step 1.

Basic information regarding a student is derived from the Registration and Enrollment Flow.

Step 2.

Each classroom or home-room teacher maintains an attendance record for the students assigned to him. In the district each individual teacher is responsible for the maintenance of the official Provincial Attendance Register which is a standardized ledger subject to audit and which must be filed for an indefinite period by the school district.

Step 3A.

In self-contained classrooms teachers record attendance and proceed to step four below.

In departmentalized types of organization a procedure is devised so that home-room teachers are informed of absences by their students' other teachers. The home-room teacher records these absences and proceeds to step four.

In senior grades students have special teachers for Home Economics and Industrial Arts. In this case attendance reports completed by these special teachers are sent to the home-room teacher who again records these absences and proceeds to step four.

Step 3B.

Students upon return to school after absences are required to present a written parental excuse which usually includes the following: (1) absent student's name, (2) date, (3) actual days of absence specified, (4) reason for absence specified, and (5) bona fide parental signature. If a proper excuse is furnished, the procedure is usually very routine. If the stated reason is not acceptable, the student

is usually referred to the School Principal for decision and direction.

Parental excuse notes re illness are sent to the school nurse by the teacher. The nurse records the information and files the note.

Step 4.

At the end of each month the teacher performs the necessary calculations and completes and updates the official Provincial Register. She then completes the form: 'Teacher's Monthly Report on Attendance and Enrollment,' and hands it in to the school secretary.

Step 5.

The secretary consolidates all the teacher's monthly reports and prepares a summary on the form: 'Principal's Monthly Report on Attendance and Enrollment.' This form is completed in duplicate.

Step 6.

The Principal signs the above form, files one copy and sends the other to central office for their use.

VI. STUDENT HEALTH RECORDS FLOW

Health services are provided to the Saskatoon Public Schools by the Public Health Department of the City of Saskatoon, directed by Dr. M. Dantow.

A nurse is assigned to visit each school on a regular weekly schedule. The school is informed if she has to be absent.

The Public School Board provides the necessary medical supplies and record forms for the use of nurses in schools. Figure 9 depicts the Health Records procedures of the district. The procedures and forms involved are discussed below.

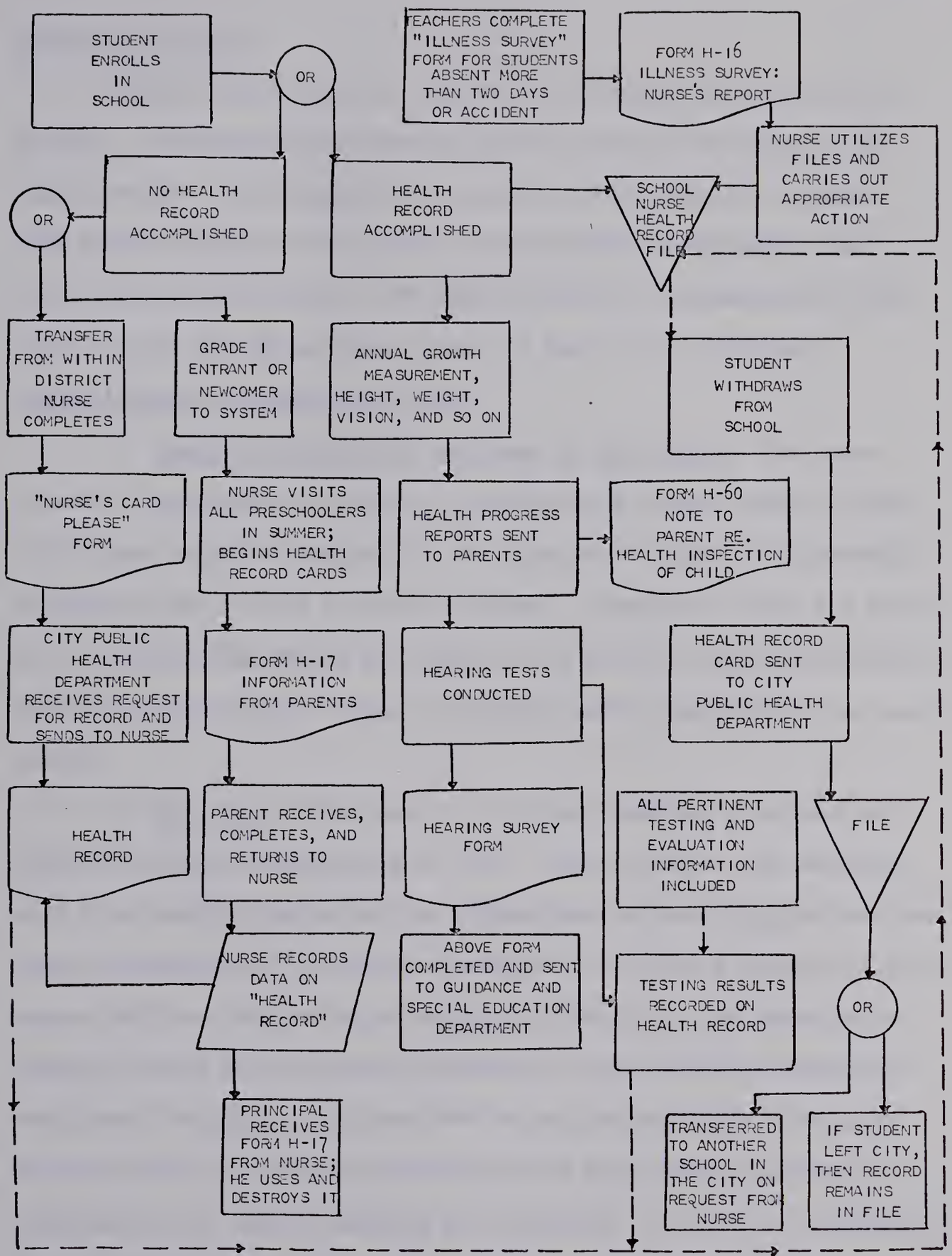


Figure 9. Student health records flow.



Health Record Card

A Health Record Card is kept for each student in the school he attends. The Health Record Card is kept on file by the nurse in the nurse's office. Each school has a nurse's office which is equipped with medical supplies and serves as an infirmary and accident treatment center for the school. The Health Record is confidential to the nurse but she usually provides access to them by the Principal.

Accomplishment of Health Record Card

1. Grade One Entrant or New-Comer to the System. The nurse attends a 'preschool tea' which is usually held in each school in June of the year prior to enrollment. She then, as a result of information gathered at the tea and from the Principal, arranges to visit the homes of all preschoolers during the summer. The tea and visitations provide her with information she needs to initiate Health Record Cards for each student.

2. Form H-17. The parents of new entrants and grade one entrants are asked to complete Form H-17. The completion and return of this form provides the nurse with information on such things as vaccinations, immunizations the children have had as well as a history of illnesses they have had and other related information. The nurse, upon receipt of Form H-17, transfers information from it to the Health Record Card. She then sends Form H-17 to the Principal who studies it and takes note of items of information that may necessitate special instructional or other treatment for the child. He would be interested in such things as whether the child has speech, hearing, or vision defects; or a heart condition. He would then inform the child's teacher if such conditions warranted special treatment. After the Principal

has recorded significant health information on the student's cumulative record folder, he destroys Form H-17.

3. Transfer from within the School District. When a student transfers into a school from another school in the system the nurse completes a 'Nurse's Card Please' form and sends it to the City Public Health Department. The Public Health Department then sends the student's Health Record to her.

Health Services Procedures

1. Nursing Inspections Routine.

a) Complete nursing inspections are carried out on all children in grades one, four and seven, plus pupils admitted from outside the city.

b) Brief annual examinations of hearing, height, weight, and vision are carried out for all other pupils.

c) Form H-60 is a note sent to parents re 'Health Inspection of Child.' The form is sent to parents by the nurse who in completing routine health inspection notes conditions that require attention. On the form she notes the conditions discovered and makes suggestions. Parents are required to sign and return the form.

d) Hearing tests are given by the nurse yearly in the fall to all students in grades one, three, six, and eight as well as to newcomers to the system. She completes a 'Hearing Survey Form' for each child tested and sends the form to the Guidance and Special Education Department for processing and further action.

e) Teachers complete Form H-16 called the 'Illness Survey: Nurse's Report' for students who have been absent two or more days because of illness or for accident cases. All notes pertaining to ill-

ness from parents are also sent to the nurse by teachers. The nurse uses the above information and according to her professional judgment arranges to examine the students or takes other appropriate action. She also records pertinent data on student Health Record Cards and files parental notes.

2. Health Record File. This file contains the student Health Record Cards and other health information. The nurse updates and enters information in the file upon completion of various surveys and examinations and receipt of information from teachers and others in regard to accidents and absences. The health record file in each school contains the records of only those students currently attending the school. When a student withdraws from the school the nurse sends his Health Record to the City Department of Public Health. All records are filed there and are released only upon the request of the nurse in a system school to which a student has been transferred, otherwise they remain on permanent file there. No Health Records are sent to systems outside the city.

VII. GRADE PROCESSING AND REPORTING FLOW

Grading involves the accurate and objective evaluation of an individual's performance in a given area. Almost without exception this responsibility and authority resides with the individual classroom teacher. This flow begins at the point at which a grade has been determined or an evaluation made by the classroom teacher. Because the system is in a period of transition regarding reporting practices, in the following description, the word grade may not refer to a specific mark but rather to an evaluation of progress.

Step 1.

The teacher determines the grade or makes an evaluation of a student's progress.

Step 2.

The grade(s) awarded or evaluation(s) made are recorded in the individual teacher's grade book and periodically, usually three times per year, on a report card. It is a general practice for teacher grade books to be retained in a permanent office file at the end of the school year.

Step 3.

Reporting frequencies and forms vary throughout the system from school to school. Within particular schools they may vary from year to year and from classroom to classroom. Although there are usually three reports per year they do not always take the form of a report card but may instead involve parent-teacher conferences. A formal report card form may or may not be sent. Instead of the report card or along with it, may be sent a narrative report, i.e. a letter from the teacher. It usually deals with such things as: the student's stage of growth and progress, academic needs of the student, and an outline of steps to be taken or recommendations for improvement. Sometimes a combination of narrative and conference reporting takes place with no report card as such used.

Step 4. Grade Reporting Instruments

1. Report Cards. There is a Pupil Progress Report Card for Division One and another for Division Two. They are basically the same, differing only in color and in the lists of subjects reported on. Grades and comments are usually handwritten. The student carries the

report home, the parents sign the back of the card to verify they have seen it, and it is returned to the issuing teacher for use in subsequent grading periods. At the end of the year the student usually is allowed to retain the card; it is not kept by the school.

2. Record of Parent-Teacher Conference. A form is provided for a record of parent-teacher conferences. It is a three-copy form. One copy is retained by the teacher, one by the parents, and the other may be sent to the Principal. The form provides space for outlining the child's strengths and needs, describing how the teacher and the parents plan to help, and finally the teacher's and parents' signatures.

Step 5.

Grade summary sheets are usually prepared by individual teachers manually. The primary uses for these summary sheets are: (1) handy office reference in response to parental inquiries, (2) a means of surveying quickly the general evaluation practices of staff, (3) guidance of students who are encountering academic difficulties, and (4) other miscellaneous permanent record functions.

Step 6.

Finally grades are recorded on the 'Permanent Cumulative Record Folder' and various follow-up and study factors are extracted.

Step 7. End-of-Year Reporting

At the end of the year each teacher completes the year-end 'Pupil Progress Summary' form in duplicate for students in grades one to seven. For grade eight students, the Provincial Form 282A: 'Final Standing, 19__, Grade Eight' is prepared in duplicate. One copy of each of the forms is retained for school files, another of each is sent to the Area Superintendent.

Step 8. Certificate of Progress

A standard certificate of progress is used and is usually issued to students at the end of each year.

Figure 10 depicts the Grade Processing and Reporting Procedures described above.

VIII. ANALYSIS OF DATA PROCESSING FLOW

This section presents an analysis of the enrollment flow that was reported on in section III of this chapter and depicted in Figure 7.

The analysis relates to three major processing functions: decision-making; communication links; and storage.

Decision-Making

An analysis of Figure 7 reveals two decision-making points. They are in order of occurrence as follows: (1) The Principal's decision on enrollment; (2) The Principal's decision as to verification of eligibility of student for enrollment.

Decision one above made at step 3 in the enrollment flow is based upon place of residence, family religion and other information gathered in steps 1 and 2 of the flow. These steps are fully described in section III of this chapter. The decision can result in one of the three courses of action described under step 3. If the third course of action i.e. 'decision is held or reserved' is taken, then decision two above is required; if not, the flow proceeds uninterrupted by further decision points.

Decision two above is held pending verification of the eligibility of the student for enrollment. If eligibility of the student is verified, enrollment procedures continue in the normal manner. If not, the student

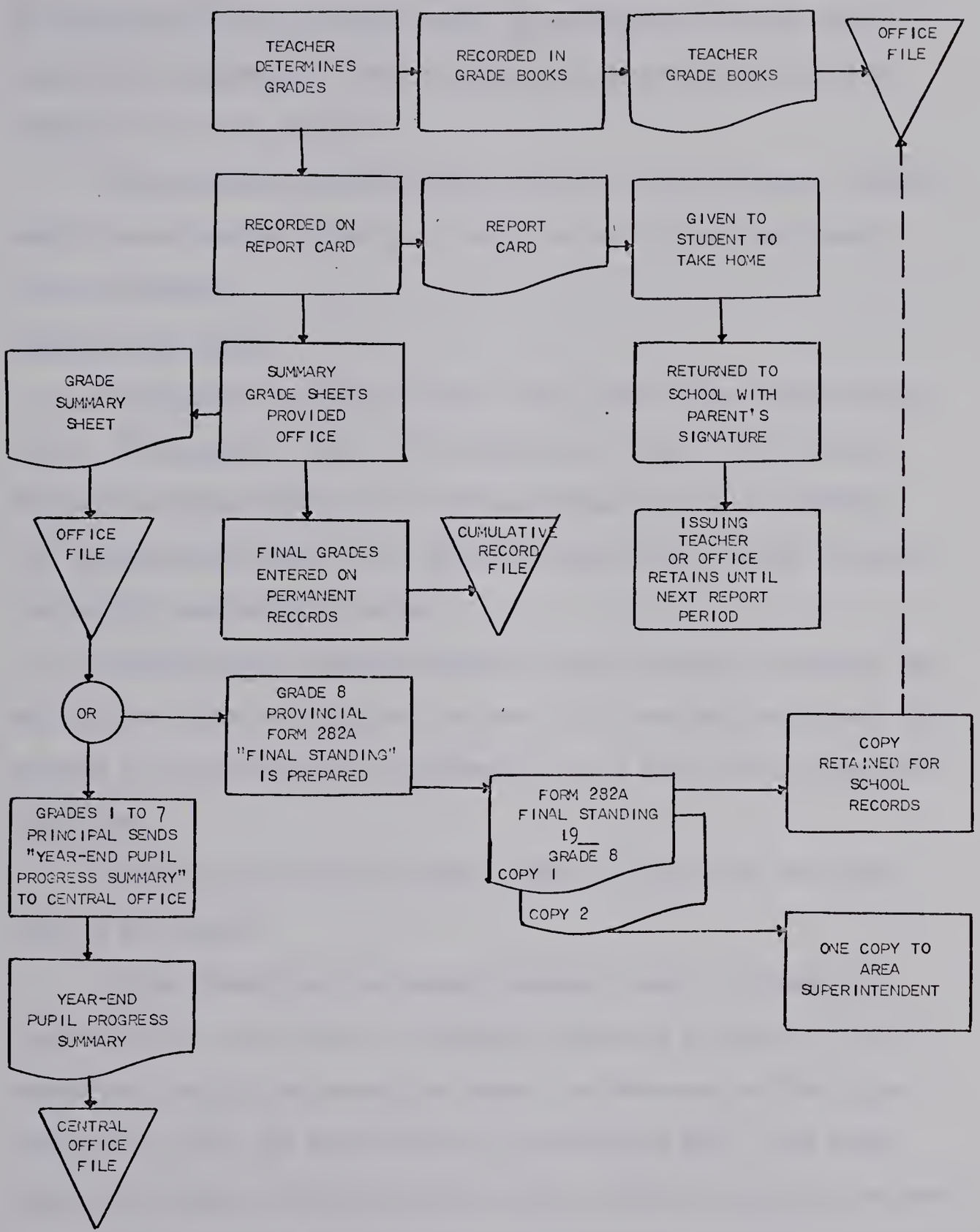


Figure 10. Grade processing and reporting procedures.



is referred to an appropriate school or is required to meet other enrollment requirements. The foregoing was described in detail in section III of this chapter.

The decisions described above are of a routine nature. Enrollment is never denied unless the student is not eligible by clearly defined criteria.

Communication Links

An analysis of the enrollment flow reveals three communication links. They were in order of occurrence as follows: (1) Between Student and School Office; (2) Between Parent and School Office; (3) Between the School Office and the Office of the School to which the student previously attended.

In the first link the student in person requests admission and may furnish transfer slip from the school he previously attended. The student is provided with an enrollment form to give to his parents for completion.

In the second link the parent sends the completed enrollment form to the school.

In the third link the school secretary sends a request for records form to the school the student previously attended. If the school was outside the system she sends the inter-system form type; if inside the system she sends the intra-system form type. The school which the student attended previously then sends the requested records.

Link one above is oral regarding the request and written regarding the transfer slip and enrollment form. Link two is written communication. Link three is also written communication. Links one and two involve communication with the student and his parents. Link three is

either an intra-system communication or communication with an outside agency depending upon what school the student previously attended.

Storage

An analysis of the enrollment flow reveals two types of storage files, permanent and temporary.

1. Temporary file. All forms involved are kept in a temporary cumulative record file until receipt of the student's records from the school previously attended.

2. Permanent file. Once the temporary file is completed as described above, the temporary file becomes a part of the permanent cumulative record file. The file becomes permanent once the Principal receives the completed temporary file and records registration in his 'Student Admission and Withdrawal Book.'

CHAPTER V

BUSINESS DIVISION DATA PRACTICES

I. INTRODUCTION

This chapter describes the formal information collection and processing procedures related to the Business Division of the district.

Five flows are dealt with: (1) Requisition, (2) Purchasing, (3) Accounts Payable, (4) Payroll Accounting, and (5) General Ledger Posting. All are presented in both narrative and chart forms. Immediately below is a section related to the uses of the information collected.

II. USES OF INFORMATION

In this section, statements made by officials of the district regarding the uses of fiscal information and procedures are presented. While each function of the Business Division has detailed and specific objectives that determine uses of information there are also major objectives of the Business Division and the total school system that determine uses of information and procedures. Through accurate budgeting and cost analysis the Business Division aims to contribute to the educational and business planning functions of the school district.

Timely and understandable information on the finances of the school district are required by the administration, the School Board, professional staff, and others in order to carry out their respective functions and serve as a basis for decision making.

Costs must be kept low, consistent with good business and edu-

cational practice. The public's investment in facilities, supplies, and equipment must be protected. Public funds entrusted to the school district must also be safeguarded.

Detailed annual and quarterly reports on costs must be prepared and the various procedures of collecting and processing information are employed and structured to obtain accurate and timely information in the detail required for these reports.

The school system maintains a general account of monies and a system-wide inventory of supplies. When money is spent and supplies distributed they are charged to the various departments and schools that use or consume them.

In light of the above general statements of objectives and uses, the following sections present some statements of specific uses of information relative to the particular flows and procedures to be dealt with in this chapter.

Requisitioning Procedures

The procedures and forms employed here serve to ensure the orderly acquisition of supplies by the various departments initiating requisitions. They serve to facilitate the charging of costs to the various expense accounts and help to maintain control over inventory. The procedures further ensure that supplies are distributed only to those who are in authority to request them and who have the right to receive them. The use of different types of requisitions facilitates faster fulfillment of requests by bringing appropriate procedures into operation. The use of the coded stores catalogue also speeds up operations and aids in the accurate recording of items removed from inventory. This further facilitates the maintaining of supplies at optimum levels.

Purchasing Procedures

The procedures used help ensure that the School Board's policies on purchasing are met. They ensure that all purchases are approved by the Department Head under whose jurisdiction it lies. Purchasing procedures are designed to ensure that the greatest possible values for the district's purchasing dollars are obtained, and that equipment and supplies are standardized to the extent required by Board policy. The procedures employed serve to enable the district to purchase goods when prices are lowest, and to maintain inventories at optimum levels so that there is not an unnecessarily large amount of money tied up in inventory, and yet have commodities on hand when required.

Accounts Payable Procedures

The procedures and forms involved are employed to ensure that the orderly, accurate, and legitimate payment of accounts for commodities ordered and received by the district is accomplished, and that payments made are charged to the correct department account.

Payroll Procedures

These procedures serve to ensure that employees receive on time the correct amount of pay and that deductions are properly accounted for and credited. The procedures and forms employed serve to ensure that the Payroll Clerk receives all the information he requires to fulfill his functions and at the same time facilitate the meeting of deadlines. Finally the procedures and forms employed are used to ensure that payroll worksheets used for control reports and posting to the General Ledger are prepared.

General Ledger Procedures

The procedures employed here serve to record the removal of materials and labour from inventory and distribute costs to the various expense accounts. The updated General Ledger serves to provide information necessary to determine accurately the costs per department and per school. It serves to provide information to department heads on budget matters and provides the Business Administrator with the information he requires for making reports.

III. REQUISITION PROCEDURES

There are four different types of requisitions used in the district: Classroom Supply Requisition, Caretaker's Supply Requisition, General Supply Requisition, and Maintenance Requisition. Following is a description of the procedures involved for each type. A flowchart is given for each procedure.

Requisition Types

1. Classroom Supply Requisition. Figure 11 depicts the procedures for requisitioning classroom supplies through the school district organization. This requisition type is used only for the requisition of items listed in the system's "Stores Catalogue"[1] other than the caretaking items. The Classroom Supply Requisition is used to order items from nine sections of the "Stores Catalogue:"

Section A: - General Classroom Supplies - Consumable

Section B: - General Classroom Supplies - Non Consumable

---

[1]Saskatoon Public Schools, "Stores Catalogue" (Saskatoon: Saskatoon Public School District No. 13, September, 1966), pp. 1-60. (Mimeographed.)

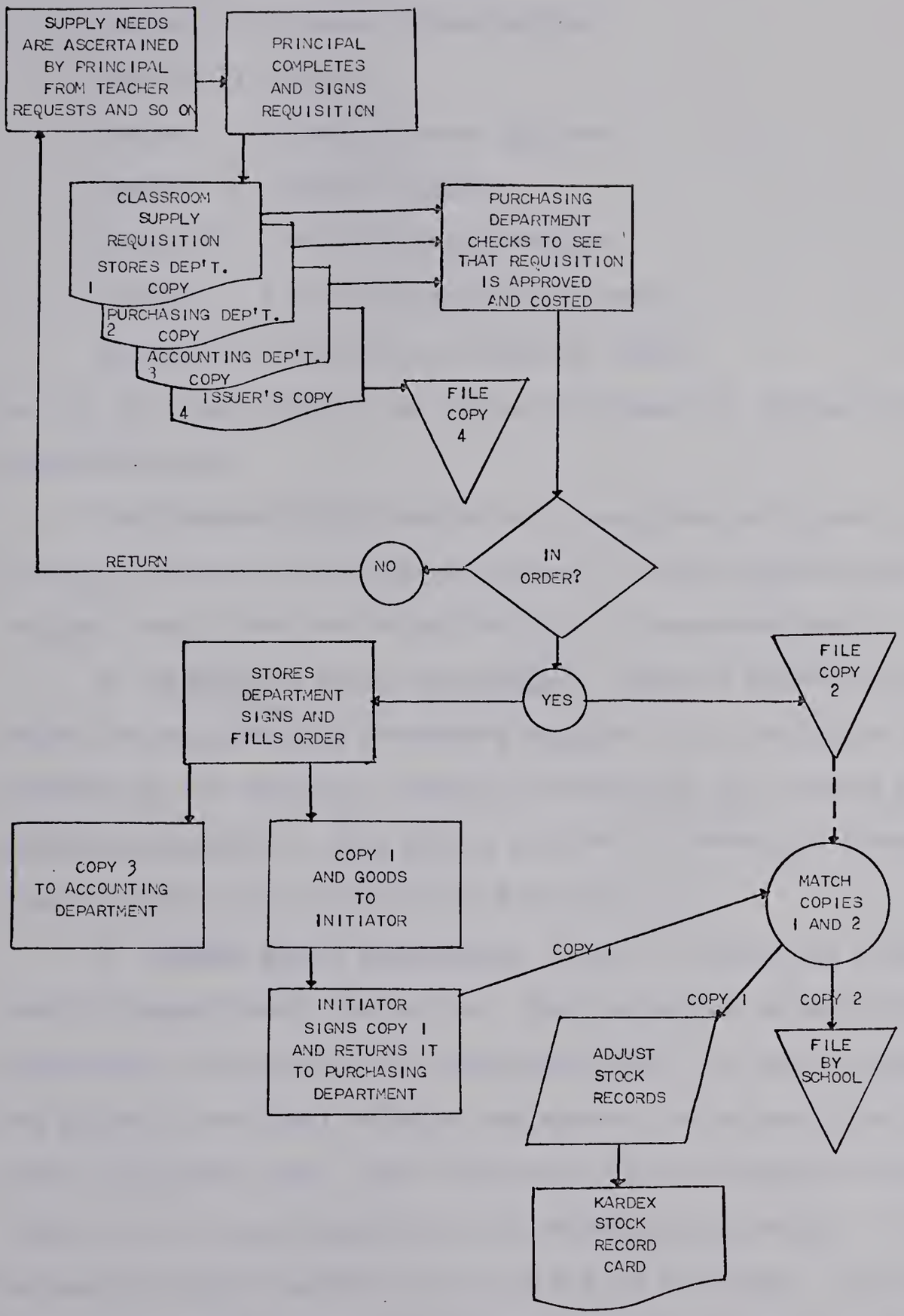


Figure 11. Classroom supply requisition procedures.



Section C: - General Office Supplies

Section F: - Forms

Section J: - Junior Science Equipment

Section L: - Library Supplies

Section M: - Manual Training Supplies

Section P: - Physical Education Equipment

Section 11: - Projector and Spotlight Lamps

Most of the items listed in the "Stores Catalogue" are stocked in the Stores Warehouse.

The Classroom Supply Requisition is completed and signed by the Principal; it does not require the approval of other administrative personnel such as the Area Superintendent or a Department Head.

2. Caretaker's Supply Requisition. Figure 12 depicts the procedure for requisitioning Caretaker's supplies. This requisition is completed by the Caretaker, signed by the Principal and approved by the Caretaking Supervisor. This form is used only to order all caretaking items listed in the catalogue under Section E.

3. General Supply Requisition. Figure 13 depicts the procedure used for General Supply Requisition. This requisition is used for all requirements not listed in the "Stores Catalogue." It must be completed and signed by the School Principal and approved by the Area Superintendent or Department Head. This requisition cannot be used for maintenance repairs or for items required from the Maintenance Department. It may be used for items stocked in the system but not catalogued. For example, it is used in the ordering of forms not listed in the catalogue; these unlisted forms are requisitioned from the Superintendent's Department on a General Supply Requisition. It is also used for items that require

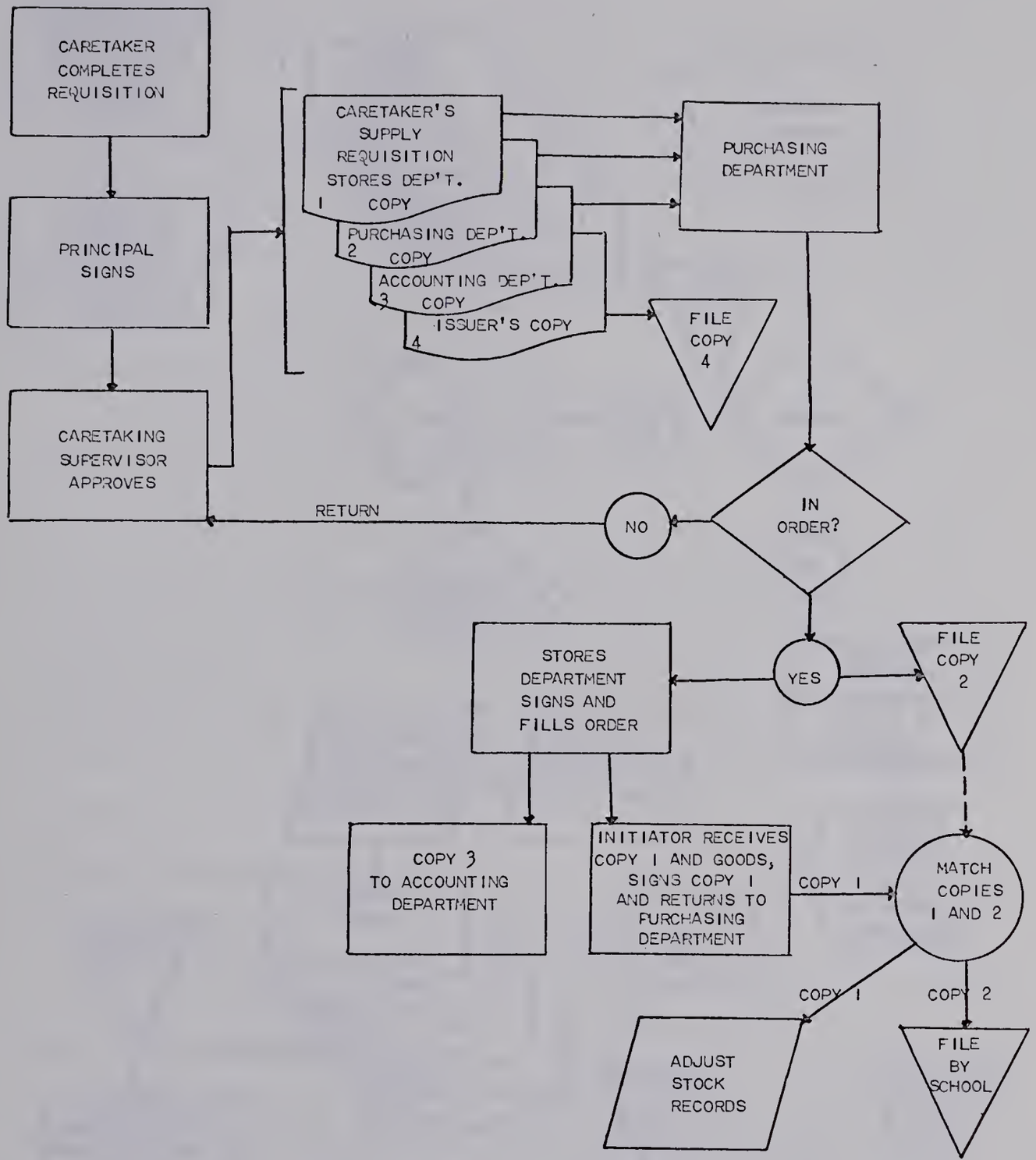


Figure 12. Caretaker supply requisition procedures.



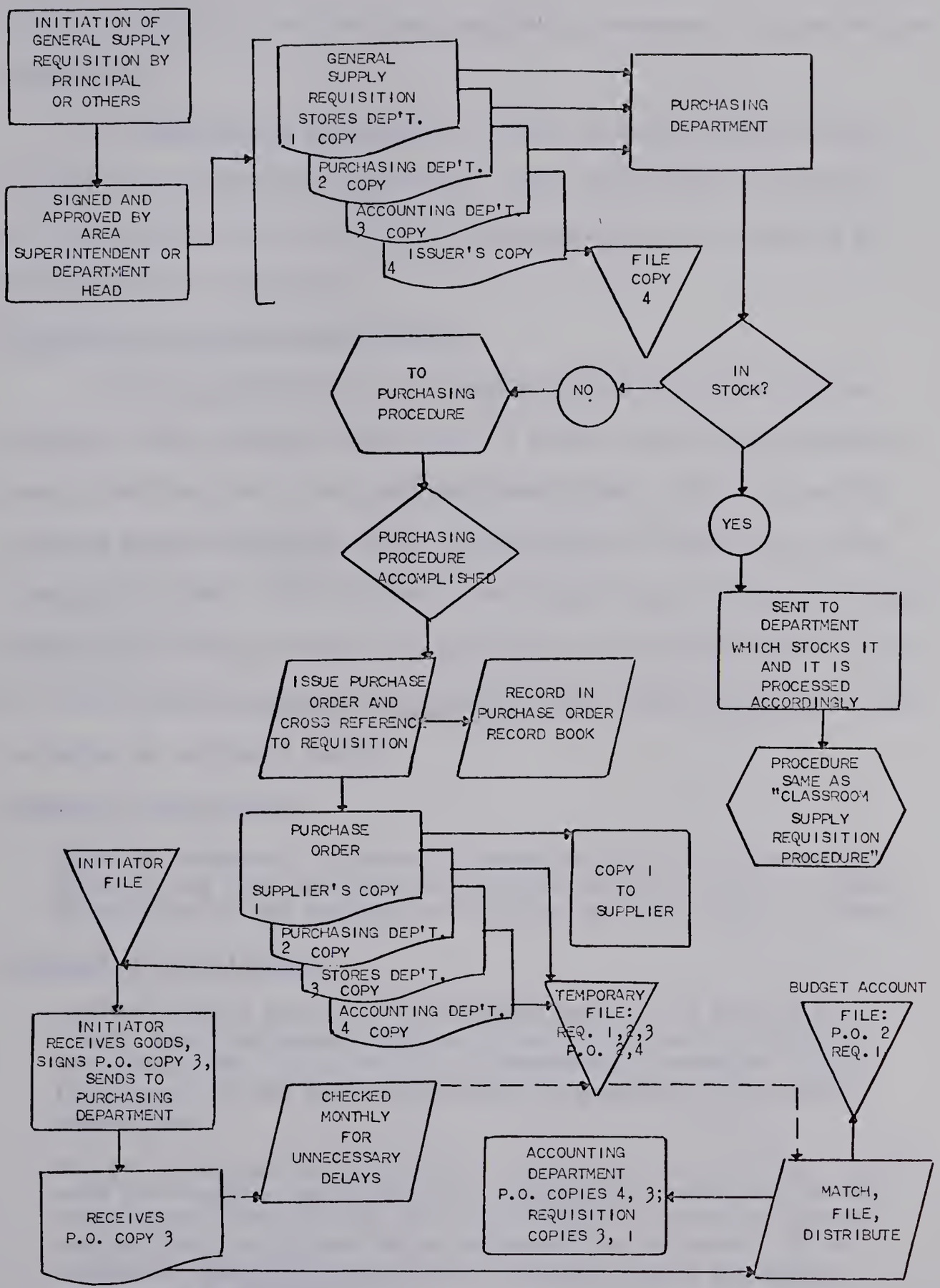


Figure 13. General supply requisition procedures.



special purchase and in this case purchasing procedures if approved are carried out.

4. Maintenance Requisition. Figure 14 depicts the procedure employed for Maintenance Requisition. This requisition is used for any requirements from the Maintenance Department and is approved by the Maintenance Supervisor.

Information Required on Requisitions

(1) In requisitioning for supplies which are listed in the catalogue, the catalogue number must be given as well as the description of the item as in the catalogue description. (2) The quantity required must be stated in terms of the units as listed in the catalogue unit column. (3) On Maintenance Requisitions and General Supply Requisitions complete details of the items requisitioned must be given. (4) Items should be listed on the requisition form in numerical order according to catalogue number.

Changes in Requisitions

> If it is necessary to delete or change an item on a requisition after it has left the hands of the Principal, the Principal will be notified of any changes or deletions and the reason for them.[2]

Disposal of Requisitions

> The first three copies of the requisition must be sent to the School Board Purchasing Office. It will then be processed in accordance with the policy of the Purchasing Department. The fourth copy of the requisition is to be retained by the school issuing it.
>
> The third copy of the requisition will be sent back to the school with the supplies requisitioned. IMPORTANT ... the copy of the requisition returned with the supplies must be checked against the supplies and signed where designated as to receipt of the supplies. This copy must then be returned to the Purchasing Department immediately.[3]

---

[2]Ibid., p. II. [3]Ibid., p. III.

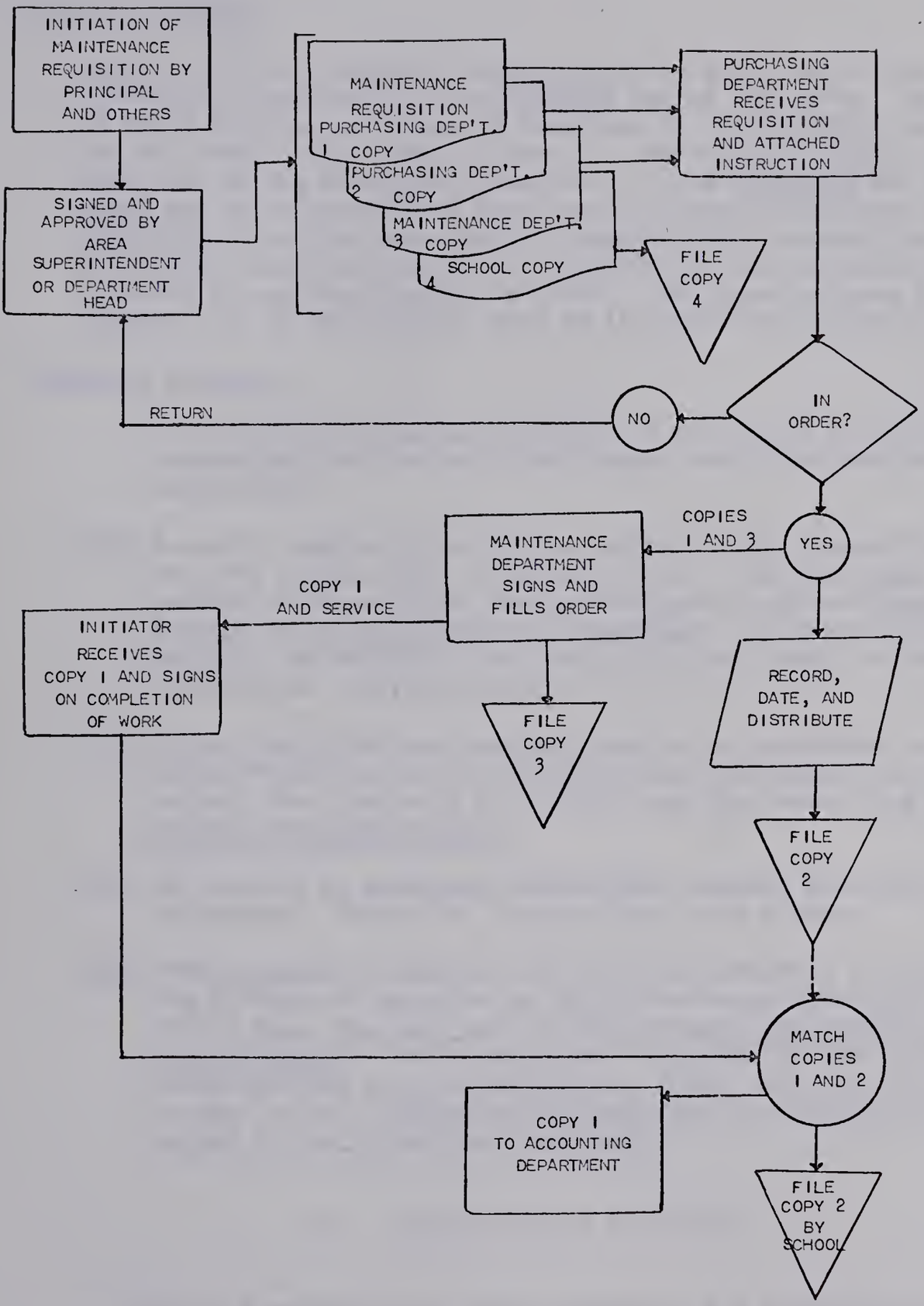


Figure 14. Maintenance supply requisition procedures.



Delivery Schedule

Requisitions for Classroom Supplies must be submitted to the Purchasing Department by the THIRTIETH day of the month. Delivery of these supplies will then be completed by the FIFTEENTH day of the following month. Requisitions for Caretaking Supplies must be submitted to the Purchasing Department by the FIFTEENTH day of the month and delivery of these supplies will then be completed by the THIRTIETH day of the same month. General Supply Requisitions, and Maintenance Requisitions, may be submitted to the Purchasing Department at any time during the month. The items on these requisitions will be delivered as soon as the goods are available.[4]

Incorrect Delivery

If the supplies are not delivered in accordance with the requisition the Purchasing Department should be notified immediately.

(A) You will receive the green copy of the Supply Requisition when the supplies are delivered to you. You must check the receipt of the supplies against the green copy and immediately forward it to the Purchasing Department. If there is any shortage, or anything else wrong with your order, it must be indicated on the green copy.

(B) If any item which was requisitioned is not available in the Stores Warehouse, at the time that your requisition is received, this item will be circled, and this means that it must be reordered by you.

(C) If you have an emergency requisition, contact the Stores Department. Please try to keep these to a minimum.

(D) When a special purchase order has been completed to cover the purchase of supplies as requisitioned on a General Requisition Form, the pink copy of the Purchase Order Form is sent to the school. The Principal must signify that the goods as listed on this copy of the Purchase Order have been received in good order. This pink copy must then be immediately returned to the Purchasing Department.[5]

IV. PURCHASE ORDER PROCEDURES

Figure 15 depicts the general procedures for purchasing supplies and equipment in the school district. Complete details of the purchas-

---

[4]Ibid. [5]Ibid.

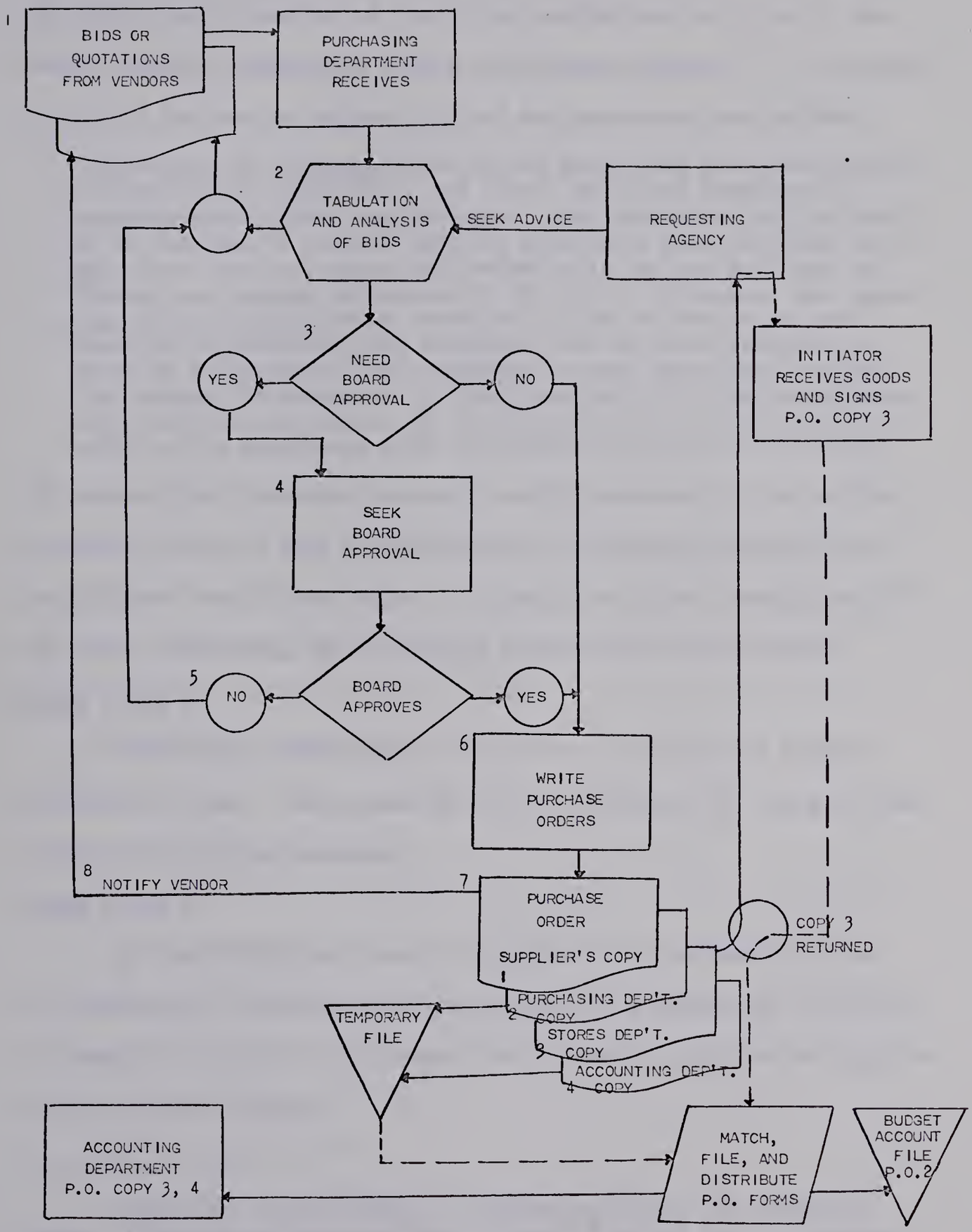


Figure 15. Purchasing procedures.



ing policy and procedures of the system studied are contained in the manual entitled "Purchasing Policy and Procedure Manual."[6] This manual is updated and revised as new policies and procedures are adopted.

> Practically all purchases made by the Board stem from requisitions, or from annual supply lists and annual estimates submitted in accordance with Board requirements. Some exceptions may be found, as in the case of certain types of equipment, such as typewriters and motor vehicles, which are traded in at regular intervals on the basis of policy determined by the Board. Likewise, the equipping of new schools is an exception insofar as the nature and quantity of the furniture, equipment, and supplies provided are based on standardized lists designed to meet the needs involved. The Business Administrator is held responsible for declaring under what conditions purchases may be made other than to fill orders submitted in accordance with established practices of the Board.[7]

All requisitions requiring purchases must be approved by the various Department Heads or Area Superintendent under whose jurisdiction the expenditures come in the budget. Following are brief descriptions of the steps involved in the purchasing procedures of the district.

Steps 1 and 2.

The Vendors submit bids or quotations to the school district purchasing office. The purchasing office tabulates bids and seeks the advice of requesting agencies.

Steps 3 and 4.

If the School Board needs to approve the acceptance of bids, the tabulations and recommended acceptance are submitted to the Board. If specific approval is not needed, the purchase orders are assigned to the appropriate Vendors.

---

[6]Saskatoon Public Schools, "Purchasing Policy and Procedure Manual" (Saskatoon: Saskatoon Public School District No. 13, January, 1967). (Mimeographed.)

[7]Ibid., p. 5.

Step 5.

If the School Board does not approve the bid, the appropriate Vendor is notified and given sufficient reason for rejection. The remaining bids are re-examined. If the School Board approves the acceptance of the bid, purchase orders are assigned to appropriate Vendors.

Steps 6, 7, 8, 9, and 10.

Purchase orders with appropriate numbers are issued to the Vendor(s). The original is sent to the Vendor, copies two through four are filed in a purchasing office temporary file alphabetically by supplier. Once goods are received, the goods plus purchase order copy three are sent to the requesting agency. The initiator of the request for goods signs copy three of the purchase order as acknowledgement of his receipt of the goods required. This copy three is then returned to the Purchasing Department.

Step 11.

Upon return of copy three of the purchase order from the receiver of the goods, the Purchasing Department distributes the three copies of the purchase order it now has. Copy two is filed by the Purchasing Department in the Budget Account File by school or department according to whom received the goods. Copies three and four are sent to the Accounting Department.

To: Accounting Procedures

V. ACCOUNTS PAYABLE PROCEDURES

Figure 16 entitled Accounts Payable Procedures depicts the general procedures of payment for supplies and equipment received by the

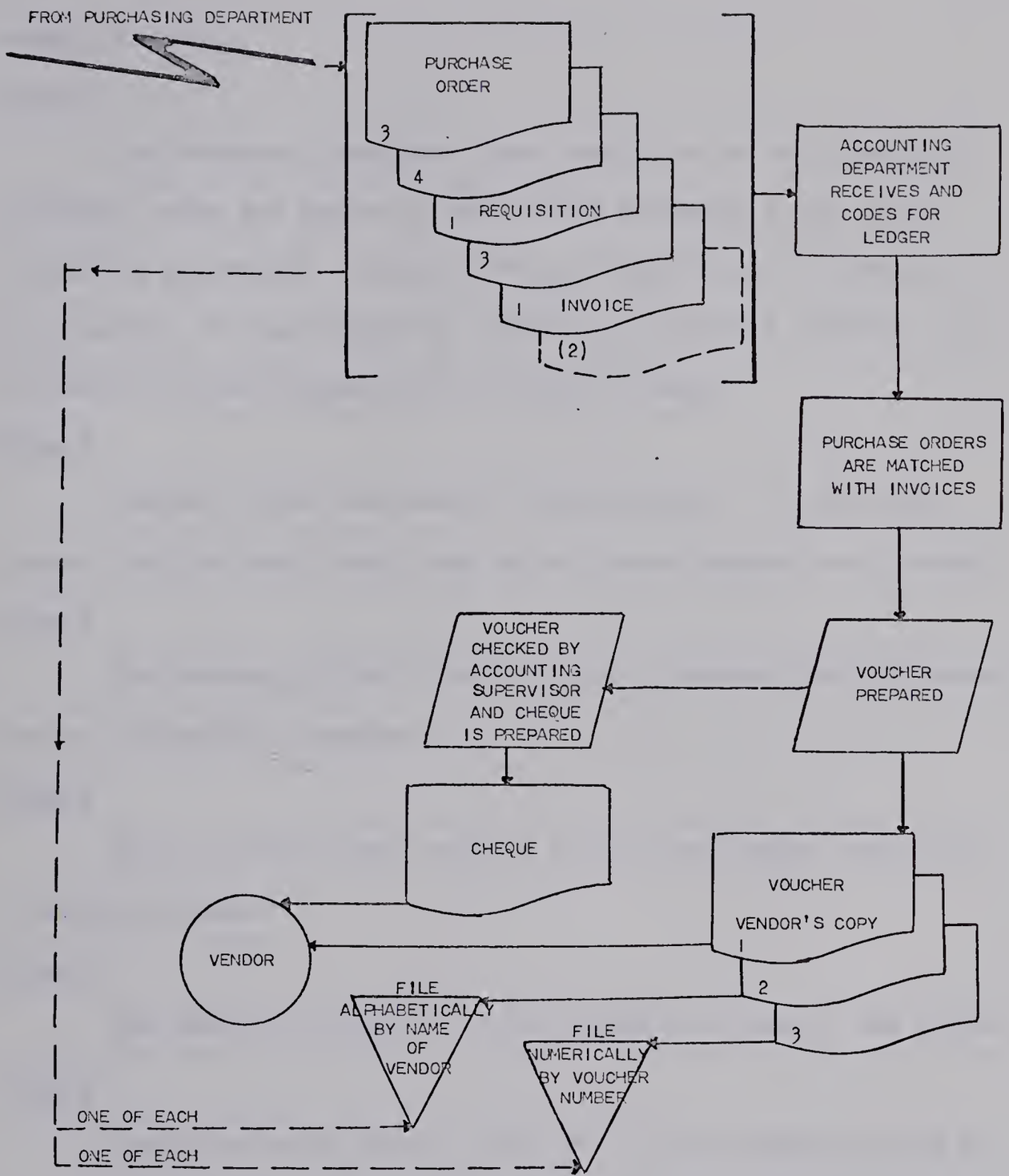


Figure 16. Accounts payable procedures.



school district.

Step 1.

The Purchasing Department upon completion of the purchasing procedure sends two copies of each of the following forms to the Accounting Department: Purchase Order, Requisition, and Invoice. Upon receipt of these forms the Accounting Department checks to see if they are coded properly for the General Ledger.

Step 2.

Purchase orders are matched with invoices. If there are a number from the same Vendor they may be placed together and totaled.

Step 3.

The Accounting Clerk then types out a voucher which is checked by the Accounting Supervisor.

Step 4.

The Accounting Clerk prepares a cheque and enters details in a cheque register.

Step 5.

The cheque and copy one of the voucher are sent to the Vendor.

Step 6.

The yellow copy, which is copy two, of the voucher jacket together with a copy of each of the Purchase Order, Requisition and Invoice are filed in an alphabetical file by name of the Vendor. The third copy of the voucher is attached to the Purchase Order, Requisition and Invoice, and filed in Shannon files in numerical order by voucher number.

VI. PAYROLL ACCOUNTING PROCEDURES

Figure 17 entitled Payroll Accounting Procedures depicts the general procedures involved in the payroll process of the district. The district maintains a nill payroll account and transfers funds into it from a general account as needs arise. The people directly involved are the Payroll Clerk, the Accounting Supervisor and Accounting Machine Operator. At present the Accounting Clerk receives payroll information from the various sources on standardized forms such as TD1 forms, appointment memos, teacher absentee report forms, as well as informal memos and phone calls. He processes the information he receives manually. He prepares summary sheets which go to the Accounting Supervisor who makes appropriate journal entries from them and uses them as a basis for making reports to various departments of the district. Copies of the summary sheets also go to the Accounting Machine Operator from which cheques are machine prepared and information posted to the General Ledger.

The Payroll Accounting Procedures of the district are presently being programmed for computer operation. Computerized payroll procedures will be adopted in the immediate future.

Following is a description of the Payroll Accounting Procedures presently employed by the district.

Step 1.

Upon the authorized employment of personnel the personnel office transmits pertinent employment data to the business office.

Step 2.

The business office requires payroll information regarding pre-

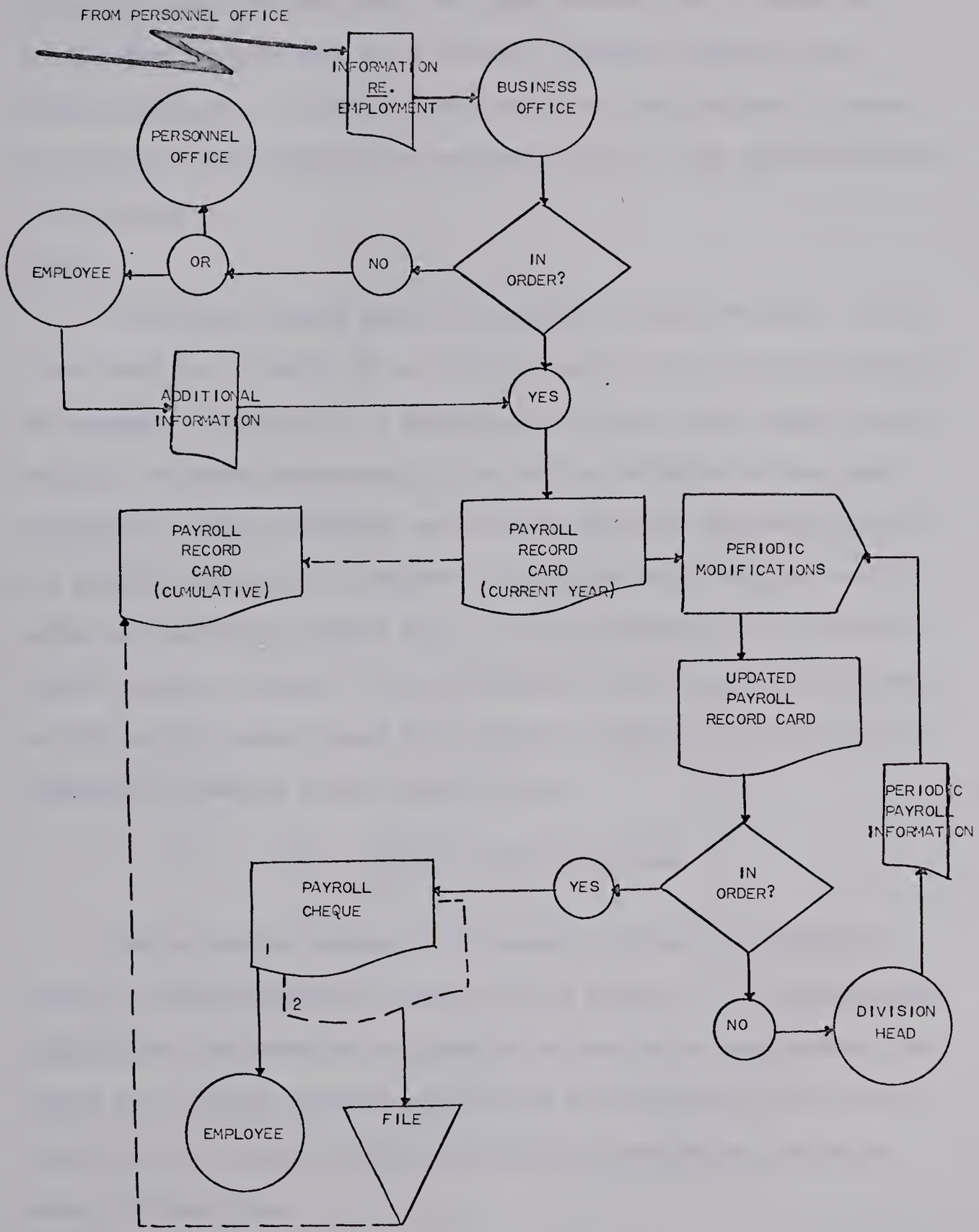


Figure 17. Payroll accounting procedures.



vious employment, accumulated sick leave, withholding information, and employee options relative to health, accident insurance, and annuity programs. If further information or clarification is needed the Payroll Clerk contacts the personnel office or the employee directly if necessary.

Step 3.

Two payroll record cards are created for each employee. One is a card used for a period of one year and upon which current information is recorded. The other is a cumulative form upon which summary information is recorded periodically; this is the one which is retained permanently. The appropriate supervisory personnel periodically submit schedule changes and pertinent information which require modification of the Payroll Record Card. If all procedures are in order, a payroll cheque is issued. Information from the cheques is maintained in file on the summary sheet from which the cheques were prepared and retained for posting to the General Ledger.

VII. GENERAL LEDGER PROCEDURE

The accounting system of the school district is designed to facilitate detailed budget preparation and control. All receipts and expenditures are coded for assignation to particular departments; and within the Academic Division assignation to the three school areas of the district is made and further divided and charged to particular schools in each area.

Following is a description of the various procedures employed and the documents involved. Figure 18 depicts the procedures in flowchart form.

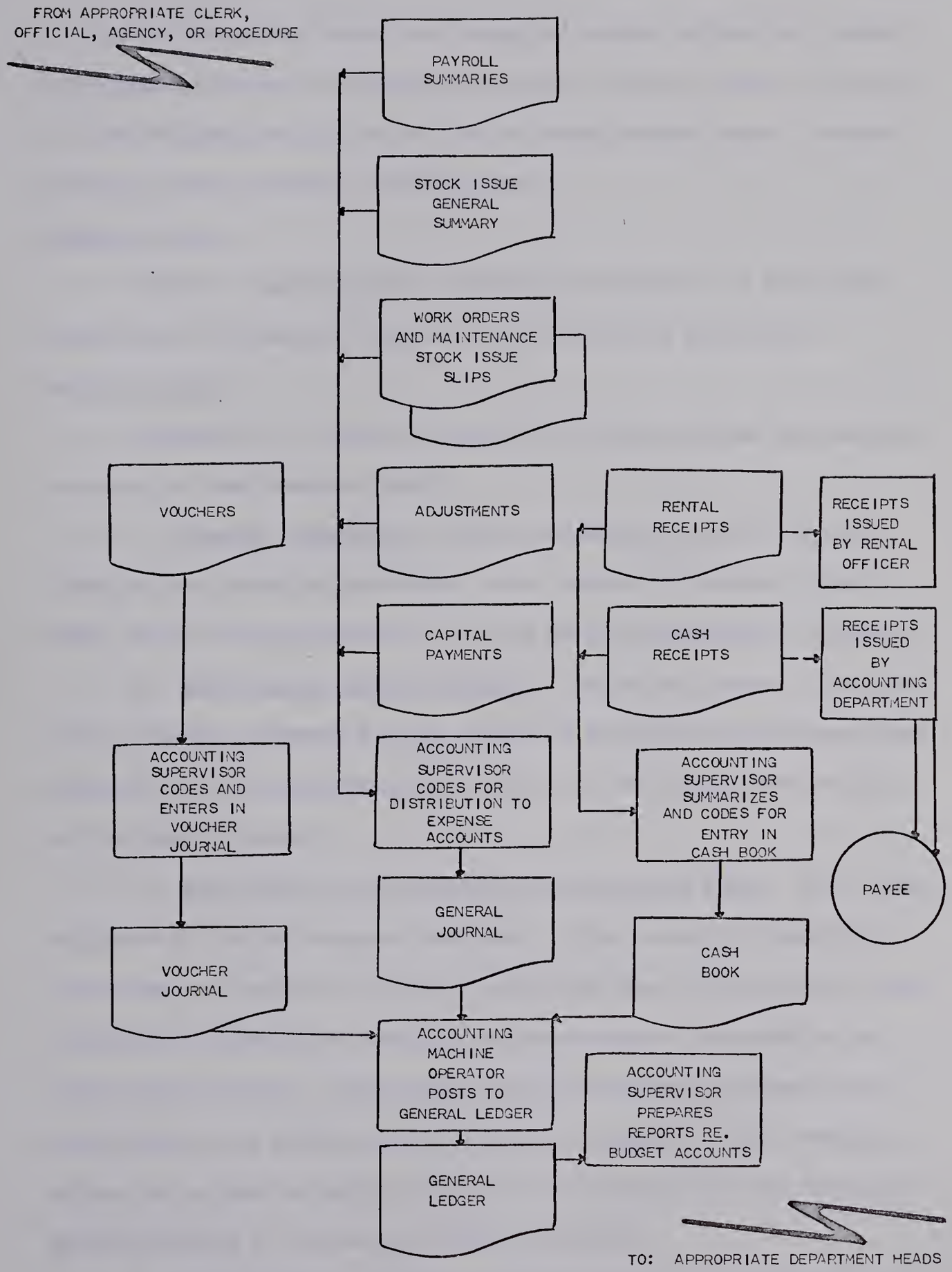


Figure 18. General Ledger procedures.



The Accounting Supervisor codes and enters information regarding expenditures and receipts received from various clerks, officials, or outside agencies into one of the following record books: Voucher Journal, General Journal, and Cash Book.

Voucher Journal

Vouchers resulting from purchasing procedures are coded and entered into the Voucher Journal by the Accounting Supervisor.

General Journal

Information is received from the following sources and prepared for entry in the General Journal.

1. Payroll Summaries. These are received from the Payroll Clerk and are coded by department, area, school, classroom, type of work, and so on; summarized entries are made in the General Journal.

2. Stock Issue General Summary. The Stores Records Clerk prepares a monthly summary of stock issues to the various departments and forwards it to the Accounting Supervisor who codes and makes entries in the General Journal.

3. Work Orders and Maintenance Stock Issues Slips. Work orders originate in the Maintenance Department. The Accounting Supervisor summarizes and prepares a journal entry from them. This journal entry charges the expenditures accounts and thus makes a distribution of labour and materials. Maintenance stock issues hence accompany the work orders and a further journal entry is prepared. This procedure serves the purpose of getting materials and labour out from inventory and distributed to the various expense accounts.

4. Adjustments. Occasionally adjustments are required such as when errors are reported, or pertinent new information is received, or

goods are transferred from one department to another.

Cash Book

1. Rental Receipts. Rental receipts for rent of school property are collected by the Rental Officer who issues receipts and turns in the cash receipts to the Accounting Supervisor. The Accounting Supervisor makes bank deposits and codes the information and records it in the Cash Book.

2. Cash Receipts. Cash receipts are received by the Accounting Supervisor from various sources such as the Department of Education, the City of Saskatoon, and sundry. He issues receipts, makes bank deposits and makes coded entries in the Cash Book.

Posting to General Ledger

The Bookkeeping Machine Operator picks up the updated and coded Cash Book, General Journal, and Voucher Journal and machine posts the information to the General Ledger. From the General Ledger the Accounting Supervisor prepares financial statements and cost statements; he also prepares information on budget accounts for the various department heads.

VIII. ANALYSIS OF DATA PROCESSING FLOW

This section presents an analysis of the General Ledger Procedures flow as described in section VII of this chapter and as depicted in Figure 18. The analysis relates to three major processing functions: decision-making; communication links; and storage.

Decision-Making

No decision points are involved in the flow. The procedures involved are straight forward involving the use of various standard

code numbers and forms.

Communication Links

The Accounting Supervisor receives information regarding expenditures and receipts from various clerks, officials or outside agencies. The communication is always of a written nature and on standardized forms. Communication from departments within the system consists of the following: Vouchers from the Purchasing Department, Payroll Summaries from the Payroll Clerk, Stock Issue General Summary from the Stores Records Clerk, Work Orders and Maintenance Stock Issue Slips from the Maintenance Department and Rental Receipts from the Rental Officer.

Communication from outside the system consists of the following: Cash Receipts from outside agencies such as the Department of Education, the City of Saskatoon and sundry.

Communication within the Accounting Department occurs when the Bookkeeping Machine Operator picks up the updated Cash Book, General Journal and Voucher Journal for machine posting to the General Ledger and presents the Accounting Supervisor with the updated General Ledger. Communication from the Accounting Department occurs when the Accounting Supervisor who, after preparing financial statements, cost statements and information on budget accounts from the General Ledger, communicates such information to appropriate department heads.

Storage

Information is coded, summarized, etc. and entered manually in proper form into one of the following: Voucher Journal, General Journal, or the Cash Book. These Journals are kept permanently and updated and coded as time goes on. At specified intervals information from the

updated Journals are posted to the General Ledger which is also a permanent storage medium.

CHAPTER VI

EVALUATION OF PRESENT PROCEDURES AND IMPLEMENTATION OF A MACHINE-ORIENTED SYSTEM

I. INTRODUCTION

This chapter first presents an evaluation of the present information practices of the district. This evaluation and discussion is based on the comments of district personnel interviewed and on observations made during the course of the study. The second part of this chapter proposes an information system which may prove applicable to the Saskatoon Public School District.

II. EVALUATION OF PROCEDURES BY DISTRICT PERSONNEL

Key district personnel interviewed were asked to comment on the efficiency of the procedures used and the adequacy of the forms involved. General satisfaction with present practices was expressed with a few exceptions as discussed below. District personnel expressed dissatisfaction with respect to the following: (1) speed, (2) accuracy, (3) detail, (4) forms, and (5) limitations of present procedures and machinery.

1. Speed. Present procedures were said to be too slow by some personnel in the Business Division. With respect to payroll, preparation of T4 slips, and posting to the General Ledger, deadlines have to be met. T4 slips now take a clerk three months to process. The Accounting Machine Operator now requires five to seven days to put cheques through, which means that the Payroll Clerk must have completed hand

analysis and other necessary tasks by the middle of each month to ensure the meeting of deadlines. The Payroll Clerk often works overtime and on weekends on his own time in order to complete his work. Personnel involved with inventory stated that lack of speed in processing was a problem that caused inconvenience. Quarterly financial reports in the detail required now take six months to complete.

2. Accuracy. While forms used were generally satisfactory, problems arose because of person errors. An example of this is when incorrect code numbers are used on requisition forms.

3. Detail. The present system of accounts is set up in detail, charging appropriate departments and schools for items removed from inventory and for cash expenditures. However, personnel felt that more detail would increase the efficiency and accuracy of inventory and budget control.

4. Forms. Forms used were said to be adequate by most personnel. School Principals, however, felt that the presently used Report Cards and Cumulative Record Folder forms were not adequate. This problem has arisen just recently because of newly adopted reporting practices which are aimed at reporting progress in terms of individual growth and on broken fronts with respect to an individual's progress in various subjects. The present forms are lock-step and geared to percentages and averages.

5. Limitations of Present Procedures and Machinery. The accounting machine now used cannot provide, during regular office hours, enough hours to record work.

Attempts are being made to resolve some of the above shortcomings. An extra clerk will be employed in the personnel records

office next year. A clerk comes in at night to help with posting, thus allowing the accounting machine to provide more hours of work. Problem forms are constantly being revised and updated by various committees to meet new requirements. Payroll is to be put on a computer program next year utilizing the City of Saskatoon's I.B.M. 1401 Computer.

Personnel felt that, while greater efficiency might be obtained by increasing staff, the benefits derived would not justify the additional costs involved. Many personnel, particularly in the Business Division, felt that use of a computer would provide for increased speed and efficiency. For example, instead of the present three months to prepare T4 slips, perhaps only half a day would be required if a computer was utilized. Canada Pension Plan adjustments could be made automatically. Totals for accounts and inventory could be accumulated to date rather than monthly. Quarterly financial reports which now take six months to complete could perhaps be done in a couple of weeks. Because of the increased speed and capacity for detail that a computer system provides, inventory detail could be expanded. This would facilitate more efficient control. Accounts payable, now on a cash basis, could include commitments which would facilitate the preparation of more accurate budget reports and reflect a more accurate picture of current financial conditions.

Most of the problems outlined above are problems perhaps found in any school system utilizing practices similar to those used by the district. They are perhaps problems inherent in any manual or paper-oriented system that processes large amounts of data.

III. A MACHINE-ORIENTED SYSTEM AND SOME TECHNIQUES FOR IMPLEMENTATION

There are three basic functions which a machine-oriented data system can serve in a school system.

> These are the administrative function of imposing a routinized and logical recording system upon the administrative unit, the clerical function of maintaining and retrieving specified elements in files, and the managerial function of producing reports and analyses from the elements that have been stored.[1]

Such a system has important limitations: ". . . it cannot gather input information, process information that is not available in storage, or make decisions as to what actions should be taken as the result of a report that has been produced."[2]

Within a paper-file system there may be a considerable amount of data gathering and data recording procedure that exists only within the memory of clerical personnel. Internal inconsistencies can be easily spotted by human clerks, and by checking additional source materials, such flaws can be resolved. A machine which is processing materials can carry out this type of cross checking for internal consistency; however, ". . . it is necessary that the machine be instructed in the precise manner in which it is to check for inconsistencies and what actions it is to take if they are discovered."[3] Hence, it may be desirable for an administrative unit to study its data gathering and recording procedures in order to remove potential sources of confusion

---

[1] G. Atkinson et al, "Project: Data/Use" (Pearland, Texas: Gulf Schools Supplementary Education Center, December, 1967), p. 29. (Mimeographed.)

[2] Ibid.

[3] Ibid., p. 30.

and inaccuracy that may exist when paper filing methods are used. "It is imperative that such a study take place before a machine-oriented system of data handling is instituted."[4]

A task particularly well suited to machine methods is the clerical function of maintaining and retrieving filed information. Advantages over the best paper-file methods include increased speed in searching for documents, less space required for information storage, and the ". . . ability to process large quantities of materials in extremely short periods of time."[5]

In preparing reports and analyses machine methods have certain advantages over hand methods. "In general, the complexity of the analysis that can be made by machine in a given period of time is the point of greatest advantage."[6] In a machine system records can be centralized in a single file and the machine can be instructed to relate large numbers of specified variables from the records contained in the files. This makes it possible to produce analyses that are both ". . . timely and pertinent as a basis for managerial decisions . . . "[7] by administrative personnel. In a manual system the time and expense required to produce complex reports from individual student, staff or other folders is such that ". . . many important managerial decisions are made on the basis of 'feeling' rather than . . . "[8] on a factual information basis. With proper planning, managerial reports can be produced on demand.

The Approach to the System

Flowcharts. Perhaps a first step in the formulation of a system design for a school district administrative unit is the separation of

---

[4]Ibid. [5]Ibid. p. 31. [6]Ibid. [7]Ibid. [8]Ibid.

the total function of the district into its component parts. This is often approached through the means of a flowchart. The Administrative Organizational Chart, Figure 2 on page ten, is illustrative of such a chart. Each of the component units of the total operation has been separated from the others in this block diagram, with lines directing the relationships among the elements of the system. This diagram possesses little detail as to the specific function of each block, however, flowcharts detailing the functions of each department can be developed, and within each department specific functions detailed further by additional flowcharts. Examples of such detailed flowcharts are contained in chapters three, four and five. These detailed flowcharts are more extensive than the block type in that many symbols are used to represent various operations and elements.

The block diagram flowchart depicting the operations of the district as a whole provides the basic framework from which an entire system design can be taken. This block diagram represents symbolically those parts of the system that are relatively self-contained.

> Moving directly from a paper-file system . . . to a complete machine-file system is quite difficult. In most instances it is easier to move from one form of record maintenance to another in a series of steps. The flowchart provides a picture of the elements in the total system that can be approached in sequence as transfer actually takes place.[9]

Many levels of flowcharts must be devised as development of the system design continues. "This process continues until the analysis for the entire operational structure is reduced to its simplest form."[10] Little is gained by attempting to produce a single flowchart as the

---

[9] Ibid., p. 34.

[10] Ibid.

mass of symbols and connecting lines tends to ". . . obscure rather than illuminate the overall network of relationships."[11]

Data Storage. "The key to the ultimate efficiency of the system lies in the amount, form, and availability of information stored in the machine files."[12] Figure 19 illustrates a block diagram that describes the entire set of files or data bank and its relationship to the machine operation. This diagram illustrates the possible future organization of the files of the Saskatoon Public School District based on its present organization. From Figure 19 it can be seen that requests for reports, data input, the computer's library of instructions and programs for processing, and the data bank contents are all brought into the computer for modification, consolidation, or extraction of information; and then either filed in the program library, returned to the data bank, or processed into edited form for the generation of reports.

It is not necessary that the structure of the subfiles within the data bank illustrated in Figure 19 be in a one-to-one correspondence with the elements of the block diagram describing the administrative organization of the school district, since

> . . . the computer is capable of extracting data from whatever files they may reside within. Subfiles are formed for convenience in relating like units of information, school operations are set up for convenience of the instructional program, and computer instruction libraries are written for convenience of producing categories of output reports; no one of these facets of the total system should dictate the form of any other. A good machine-oriented operation must expand the capacities of the school district to make valid managerial decisions rather than restrict it to 'feeding the machine.'[13]

---

[11] Ibid. [12] Ibid. [13] Ibid., p. 36.

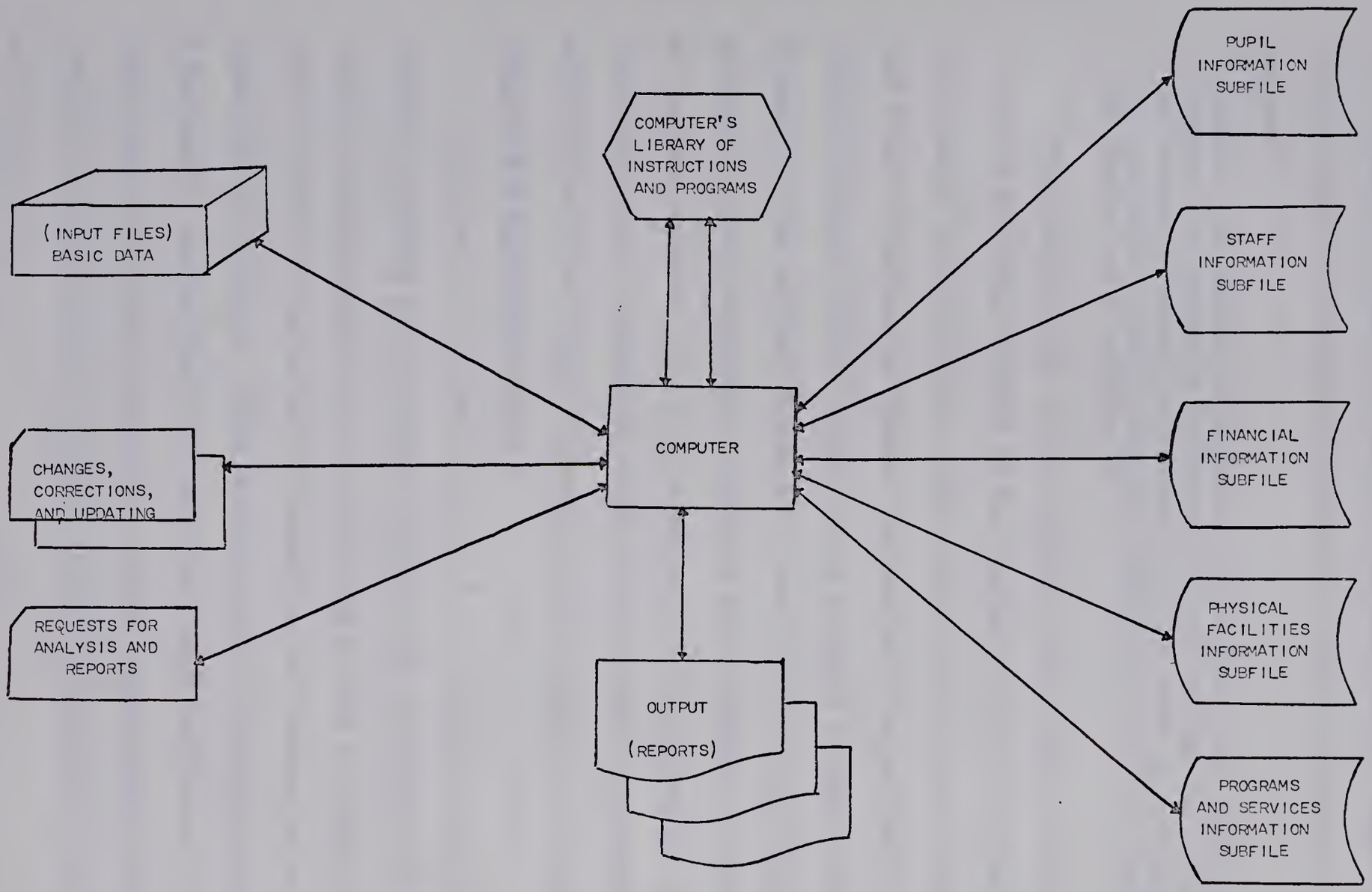


Figure 19. Proposed organization of a filing system.



Specific contents of the data bank subfiles will depend upon the requirements of the school district for which the system is designed.

> Further, the subfile arrangements and contents will differ depending upon the length of individual records that can be processed, the medium of storage for records, (i.e., random or serial order for retrieval), and the specific demands that are to be made upon the entire set of subfiles.[14]

The content of the various subfiles would perhaps include all or most of the items included in the findings reported in this study. The personnel of the Saskatoon Public School District would decide on what items to include and whether they wanted to expand detail by including additional items. They would be governed in their decisions by what they see as their information needs and what they determine as uses for this information. Certainly the statements of uses made by them and reported on in this study would be considered but in addition other uses of information might be desired when the potential capabilities of any computer system they might adopt are determined.

Usage of the Information System

The uses of a data bank would be ". . . dictated both by the materials included and by demands made upon the collection."[15] The machine's scanning, matching, and collating of sets of facts would make obtainable a wide variety of managerial and administrative reports, summaries, and analyses. These outputs would be obtainable either on a frequent or routine basis. District officials would have to decide which reports they would want and how often. Other reports would be produced only when specific problems arose that required factual infor-

---

[14] Ibid., p. 37.

[15] Ibid., p. 59.

mation as a basis for sound judgments by administrative staff.

Implementing the Data Bank and Information System

In implementing the data bank and information system the following points require consideration. Excessive optimism should be avoided. Moving from a largely paper-oriented operational technique to the machine-oriented operational mode is a task that is neither easy nor one that can be accomplished in a short period of time.

"The information system should be installed in parts rather than as a total entity."[16] To have everything readied for simultaneous introduction would require an enormous amount of time and staff effort. The Saskatoon Public School District seems to be following a procedure of preparing subsystems one at a time for inclusion in a computer information system. Payroll, the first to be included, will be accomplished in the fall of 1968, however, while other subsystems are planned for inclusion, no definite decisions have been made as to when other subsystems will be included or what they will be.

Machine-oriented systems and paper-oriented operations are similar in most ways.

> Both are means of holding information in storage, both are useful only insofar as their contents are accurate, and both are dependent upon human skills in obtaining input and usage of output. The two differ in mode of storage, manner of handling and locating individual elements to be retrieved.[17]

Clerical staff sometimes react negatively when an organization is considering or implementing a transfer to a machine-oriented system.

> The clerical staff that currently handles records is probably the single best source of information about the actual manner in which paper-oriented files are processed, used, and maintained; without

---

[16] Ibid., p. 63.

[17] Ibid.

> their active interest, cooperation, and support the task of analysis and transformation of systems becomes excessively difficult. Clerical staff should be involved in the planning for such a change.[18]

It is sometimes difficult for staff members to accept the fact that current operating procedures are less than perfectly efficient.

> A willingness to both examine basic methods of keeping records and modify these in the event that improvements can be suggested is a necessity that must be recognized in approaching a conversion of record processing.[19]

The first time that a specific machine-oriented process is used it is desirable that the paper-oriented operation it is to replace is performed along with it. This will ensure that any computer program errors or problems not anticipated do not cause the day-to-day administration of the system to breakdown. Once the machine-oriented process has been proven accurate, then duplication can be eliminated.

IV. CONCLUSION

This chapter gave an evaluation of the present information practices of the Saskatoon Public School District and proposed an information system that might prove applicable to the district. It was observed that the district is already moving into the area of computer operation with respect to the payroll subsystem of its operations. The fact that the district studied also performs the business operations for the Saskatoon Collegiate Board is an important factor in terms of reducing the costs of implementing such a system for business functions.

Once all the subsystems of the Business Division are machine-oriented the districts involved may decide to cooperate further and

---

[18] Ibid., p. 64.

[19] Ibid.

extend their relationships to include the common processing of information related to other divisions. In fact, economic reasons and the mutual benefits to be derived from a sophisticated machine-oriented information system may encourage the participation of other school districts both in the city and in surrounding areas.

CHAPTER VII

SUMMARY AND SUGGESTIONS FOR FURTHER RESEARCH

I. SUMMARY

The purpose of this study was to survey certain current educational data practices of the Saskatoon Public School District. The formal information practices of the district with respect to five information categories were investigated: Fiscal, Property, Staff, Student, and Curriculum.

Extensive formalized information practices were found in the Business Division, Pupil Personnel, and Staff Areas. Chapters Three, Four and Five presented flowcharts and narrative descriptions of procedures of subsystems in each of these areas. In addition to the presentation of narrative and symbolic descriptions of these data practices, statements on the uses of the information and procedures employed in their collection, processing and use were given.

Chapter Six presented an evaluation of the present information practices employed by the district, and discussed implementation of a machine-oriented system applicable to the district.

Chapter One presented and discussed the problem, its importance and delimitations, and the limitations of the study. Characteristics of the district were also presented and definitions of various terms and symbols used in the study were given.

Chapter Two outlined the approach used in carrying out the study and described the sources and treatment of data.

The next section summarizes the findings.

II. SUMMARY OF FINDINGS

The bulk of the thesis presented findings of the survey. The development of flowcharts and accompanying narratives presented findings relative to the procedures they delineated. It was found that in the system there existed definite, logical patterns of information flows. It was also found that the system not only had defined uses for the information it gathered, but realized the limitations of present procedures and looked ahead to improved procedures in the future. While all of the above, like an unexplored continent, existed before this study was made - most of it was unmapped. The 'unmapped' area might be likened to a puzzle, one or more pieces of which were held by individuals isolated or semi-isolated from persons holding the other pieces. The findings of this study consisted of mapping out the procedures used in the system, of piecing together the scattered pieces of the puzzle by gathering them together, and then of organizing them into a coherent whole.

Specific findings of the study are enumerated below.

1. The district's information system is largely manual and is paper oriented.

2. The system requires record keeping in detail in order to provide the degree of budgetary control etc. it desires.

3. The system is aware of the fact that the addition of more personnel will not be sufficient to maintain the information systems at the degree of detail, timeliness and accuracy they presently desire. The amount of paper work seems to increase geometrically as the system and the demands upon it grow. For example, while the Kardex system has aided storage and retrieval of personnel and inventory information - it,

too, because of its manual nature, will not be able to keep pace with the increased growth of the system.

4. Machine methods of data processing such as sorting, collation, storage and retrieval will have to be introduced if the system wishes to maintain present levels of operations and expand detail.

5. Computer machine methods will have to be introduced in the Business Division as the N.C.R. machine now used cannot cope with the work required during normal work hours. As the system expands the present machine will, in the near future, be unable to provide adequate output even if operated continuously.

6. The system, realizing the above, is computerizing its payroll processing and expects to expand computerization to other areas as well.

7. The system sees the computerization of its systems' information processing functions as not only providing a more efficient and useful method of meeting its present data requirements, but sees its usefulness in expanding detail, coping with the increasingly larger inputs of information and providing for the more desirable, accurate, detailed and timely outputs. This alone may justify the cost of computerizing present activities.

III. SUGGESTIONS FOR FURTHER RESEARCH

Further research may be required in the area of automatic data processing. Many school systems have adopted automatic data processing techniques, however, there has been little or no research which has examined empirically the advantages or disadvantages of automated over

traditional paper-oriented techniques.[1] This study has presented some evidence that points out disadvantages of a paper-oriented system, although the question of costs has not been considered.

Some educators, it appears, have the opinion that machine-oriented systems can provide financial advantages to large districts only.[2] There is, however, little empirical research evidence to support this contention.

However, even if it is found that no financial advantages accrue to the medium-sized school district that institutes a machine-oriented system, perhaps other advantages gained may outweigh this.

If the above argument is valid, then there appears to be a need for empirical research into the relative advantages or disadvantages of a machine-oriented system over traditional techniques with respect to advantages other than financial.

While many applications of computer techniques to educational problems have been documented there has been very little empirical research done to support the optimistic claims made in the literature.

Many applications to educational problems have been or are in the process of development in the United States. These projects, however, have been supported by large sums of Federal and State money. Certainly school systems not supported by such funds can benefit from the programs developed by such projects. But when such developed applications are to be translated to local situations such as in the

---

[1]H. D. Hemphill, "A Survey and Analysis of the Adoption of Automatic Data Processing in Canadian School Districts" (Unpublished Master's thesis, The University of Alberta, Edmonton, 1966), p. 132.

[2]Ibid.

district studied, accurate information about costs, benefits, and so on are required. Empirical research related to this needs to be done so that school districts contemplating innovation have a sound basis for deciding whether to commit themselves to the practical adoption of new techniques.

IV. IMPLICATIONS

Extensive sophisticated data-processing procedures are perhaps often found in the business divisions of school districts. It is also in financial areas that school districts perceive it essential to have timely information available. Timely information regarding current financial status is important in decision-making. However, is not timely information regarding curriculum status just as important? Would not the availability of timely information in curriculum areas provide incentives regarding allocation of funds to the various areas of instructional programs?

The writer is implying that, while up-to-date information regarding financial status of school districts is an important element, perhaps current information regarding instructional programs may be just as important. If the major purpose for the existence of school districts is to educate children, then surely the above points are worthy of consideration.

School districts, while in the process of developing extensive financial information systems, could extend this activity to the extensive development of information systems in other areas, particularly those more directly related to instructional programs.

Another implication of this study relates to the nature of

systems studied. Future researchers of information systems in medium-sized urban school districts should not overlook the variable introduced by the contractual relationships districts have or could have with other districts. This introduces a related implication viz. school districts of the size considered may have to provide services to other districts on a cooperative basis in order to enable them to expand their operations to a size where they can afford to sophisticate their operations to desirable levels.

These are examples of some of the kinds of implications that might be drawn from a study of this nature. Other implications could doubtless be drawn. This is perhaps illustrative of the value of undertaking a study of a school district or specific aspects of a district's operation.

BIBLIOGRAPHY

BIBLIOGRAPHY

A. BOOKS

Bushnell, Don D., and Dwight W. Allen. The Computer in American Education. New York: John Wiley and Sons, Inc., 1967.

Haga, E. (ed.). Automated Educational Systems. Elmhurst, Illinois: OA Business Publications, Inc., 1968.

Loughary, John W. Man-Machine Systems in Education. New York: Harper and Row, Inc., 1966.

Thayer Lee O. Administrative Communication. Homewood, Illinois: Richard D. Irwin, Inc., 1961.

B. PUBLICATIONS OF THE GOVERNMENT, LEARNED SOCIETIES, AND OTHER ORGANIZATIONS

AASA Committee on Electronic Data Processing. EDP and the School Administrator. Washington: American Association of School Administrators, 1967.

Bushnell, Don D. (ed.). The Automation of School Information Systems. Washington: Monograph No. 3, The National Education Association, 1964.

Canadian Education Association, Research and Information Division. Just What Is Data Processing? Toronto: Canadian Education Association, 1967.

Grossman, Alvin. "A Report of a Study-Processing Pupil Personnel Data," Bulletin of the California State Department of Education, 31:No. 2, March, 1962.

_____. "The School Information System," The Automation of School Information Systems, Don D. Bushnell, editor. Washington: National Education Association, 1964. Pp. 27-29.

IBM, Technical Publications Department. Flowcharting Techniques. Document C20-8152. White Plains, New York: International Business Machines Corporation.

_____. Flowcharting Template. Form X20-8020. White Plains, New York: International Business Machines Corporation.

Putman, John F., and George G. Tankard, Jr. Pupil Accounting for Local and State School Systems. Bulletin No. 39, U.S. Office of Education. Washington: Government Printing Office, 1964.

Reason, Paul L., and Alpeus L. White. Financial Accounting for Local and State School Systems. Bulletin No. 4, U.S. Office of Education. Washington: Government Printing Office, 1957.

_____, and George G. Tankard, Jr. Property Accounting for Local and State School Systems. Bulletin No. 22, U.S. Office of Education. Washington: Government Printing Office, 1959.

C. PERIODICALS

Anderson, Ernest G. "Local School Districts and Data Processing," AEDS Monitor, 4:8-12, March, 1966.

Bushnell Don D. "Information Retrieval Systems and Education," Journal of Educational Data Processing, 1:146-52, Fall, 1964.

Carlson, Charles. "Data Processing for School Business - A Case Report," Journal of Educational Data Processing, 3:22-24, Winter, 1965-66.

Flowers, John F. "An Educational Information and Data System," Educational Data Processing Newsletter, 4:1-5, May, 1965.

Kaimann, Richard A. "Project TUHL - An Integrated Educational Data Bank," AEDS Monitor, 5:12-15, March, 1967.

Katzennaeyer, William G. "The Wisconsin Educational Information System," AEDS Monitor, 5:3-5, March, 1967.

Prentice, Justus A. "Multi-School Educational Data Processing Via Central Computer," Data Processing for Education, 5:1-3, May, 1966.

Shaw, Philip S. "An Information System for Education A Position Paper," AEDS Monitor, 6:3-7, January, 1968.

Tonks, Jesse W. "General Education and Management Systems," AEDS Monitor, 5:6-7, April, 1967.

D. ESSAYS AND ARTICLES IN COLLECTIONS

Haberstroh, C. J. "Organization Design and Systems Analysis," Handbook of Organizations, James G. March, editor. Chicago: Rand McNally and Company, 1965. Pp. 1171-1211.

Howe, Robert L. "Solution to Report Preparation: The Common Data Base," Data Processing for Education Administration, Detroit: American Data Processing Inc., 1968. Pp. 94-104.

Kornfeld, Leo L. "Educational Information Systems," Data Processing for Education Administration, Detroit: American Data Processing Inc., 1968. Pp. 13-17.

Milhalka, Louis L., and Paul L. Seramur. "Information Flow Theory and Concept of Management: A Universal Concept," Data Processing for Education Administration, Detroit: American Data Processing Inc., 1968. Pp. 31-39.

E. UNPUBLISHED MATERIALS

Atkinson, G. et al. "Project: Data/Use." Pearland, Texas: Gulf Schools Supplementary Education Center, December, 1967. (Mimeographed.)

Gathercole, F. J. "Education in Transition." Saskatoon: Saskatoon Public School District No. 13, January, 1968. (Mimeographed.)

_____. "Individualized Teaching and Learning." Saskatoon: Saskatoon Public School District No. 13, December, 1967. (Mimeographed.)

_____. "Principal's Handbook." Saskatoon: Saskatoon Public School District No. 13, August, 1961. (Mimeographed.)

_____. "Saskatoon Collegiate Institutes, Report of the Director of Education." Saskatoon: Saskatoon Public School District No. 13, October, 1967. (Mimeographed.)

_____. "Saskatoon Public Schools, Report of the Director of Education." Saskatoon: Saskatoon Public School District No. 13, October, 1967. (Mimeographed.)

Hamilton, G. et al. "Annual Report to the Director of Education from the Area Superintendents for the School Year 1966-67." Saskatoon: Saskatoon Public School District No. 13, June, 1967. (Mimeographed.)

Hemphill, H. D. "A Survey and Analysis of the Adoption of Automatic Data Processing in Canadian School Districts." Unpublished Master's thesis, The University of Alberta, Edmonton, 1966.

Hume, A. C. "Annual Report to the Director of Education from the Department of Instruction for the School Year 1966-67." Saskatoon: Saskatoon Public School District No. 13, June, 1967. (Mimeographed.)

MacKinnon, F. A. "Annual Report to the Director of Education from the Guidance and Special Education Department for the School Year 1966-67." Saskatoon: Saskatoon Public School District No. 13, June, 1967. (Mimeographed.)

Project O.T.I.S. "Oregon Total Information System - A Proposal to the U.S. Office of Education, Title III E.S.E.A. Volume II - Appendix I." Eugene, Oregon: The O.T.I.S. Project, July, 1967. (Mimeographed.)

Saskatoon Public Schools. "Annual Financial Statements and Auditor's Report." Saskatoon: Saskatoon Public School District No. 13, February, 1967. (Mimeographed.)

_____. "Gifted Children in the Saskatoon Public Schools, A Report from the Special Committee on the Education of Bright and Gifted Children." Saskatoon: Saskatoon Public School District No. 13, January, 1968. (Mimeographed.)

_____. "Manual - Organization and Administrative Systems and Procedures." Saskatoon: Saskatoon Public School District No. 13, 1965. (Mimeographed.)

_____. "Manual - Planning, Budgeting, Control and Accounting." Saskatoon: Saskatoon Public School District No. 13, 1966. (Mimeographed.)

_____. "Purchasing Policy and Procedure Manual." Saskatoon: Saskatoon Public School District No. 13, January, 1967. (Mimeographed.)

_____. "Report of the Committee on an Extended Period for Year One Beginners." Saskatoon: Saskatoon Public School District No. 13, 1967. (Mimeographed.)

_____. "Report on Reporting Practices in the Saskatoon Public Schools." Saskatoon: Saskatoon Public School District No. 13, April, 1968. (Mimeographed.)

_____. "Staff Calendar." Saskatoon: Saskatoon Public School District No. 13, September, 1967. (Mimeographed.)

_____. "Staff Utilization, A Report to the Director of Education from the Staff Utilization Committee." Saskatoon: Saskatoon Public School District No. 13, March, 1968. (Mimeographed.)

_____. "Stores Catalogue." Saskatoon: Saskatoon Public School District No. 13, September, 1966. (Mimeographed.)

_____. "Total Cost of Schools and Cost per Classroom by Individual Expenses, Saskatoon, September to December, 1967." Saskatoon: Saskatoon Public School District No. 13, June, 1968. (Mimeographed.)

B29912